The Newspaper of Information Systems Management
June 24, 1996, Vol. 30, No. 26, 154 Pages, $6/Copy, $48/Year

COMPUTERWORLD

INSIDE.COM

Computerworld is all over the Web. Check out this week's coverage:

COMPUTERWORLD intranets

INTRANETS PROMISE HIGH PAYBACK. But measuring their cost — and even their benefits — is no easy task. **Our new monthly supplement starts after page 40.**

Also see COMPUTERWORLD

WEB 101:

MEET THE NEXT GENERATION OF TECHNOLOGY LEADERS: A high school club that can teach corporate IS a thing or two.

Bruce Howe: teacher, sponsor of the Sachem Webslingers

See In Depth, page 99

Real men don't use Web tools

Forget those fancy Web development tools. Basic text editors seem to do the job just fine, according to 442 webmasters surveyed by *Computerworld*. Most are satisfied with Windows Notepad-style editors unless they're working on very complex Web pages. **See Buyer's Guide to Web Authoring Tools, page 89**

PRODUCT REVIEW

New versions of Netscape and Internet Explorer are in beta testing. For openness and cross-platform support, Netscape is still the better choice. But Microsoft's browser is finally ready for prime time, too. **See the Internet section, page 64**

Newspaper

A River runs through NT

Users, analysts say next NetWare release will turn tide

By Laura DiDio

When Green River, the next major release of Novell, Inc.'s NetWare, ships this summer, it will contain a flood of features designed to dramatically increase reliability and ease of use.

Equally important, Green River promises to reduce the flow of NetWare defections to Windows NT to "a mere trickle," users and analysts said.

Early beta users and systems integrators revealed last week that Novell has incorporated several surprises in Green River that turbocharge the network operating system.

"Novell corrected a lot of things that were hampering the mind share of 4.1. It's no longer a big, complicated enterprise product that requires a [Certified NetWare Engineer] to install," said Josh Turiel, director of information services at Ad Life Marketing in Norwood, Mass.

Green River, *page 133*

Robert Harbison, Green River beta tester, *praises crash recovery feature*

Switch makers fuel relay race

By Bob Wallace and Kim Girard

The cost of frame-relay networking is about to plummet. Top switch vendors are rolling out products that let carriers offer the industry's hottest data service for less money and with a greater choice of speeds.

Frame relay

Switching powerhouse StrataCom, Inc. will start the price war this week with a product that will enable carriers to provide almost 10 times more connections for a quarter of current prices, according to documents obtained by *Computerworld*.

"The frame-relay price war has begun in earnest, and we expect the cost of providing a 56K bit/sec. connection to drop by as much as 50% more in the next 18 months," said Rick Malone, an analyst at Vertical Systems Group, Inc. in Dedham, Mass. "There's heavy pressure on all the switch vendors to slash prices."

StrataCom's Port Concentrator Shelf cuts the price per port for a 56K bit/sec. connection by nearly 75%, from $2,000 to $511.

Analysts said carriers that use StrataCom switches heavily — AT&T Corp., LDDS/Worldcom, Inc., CompuServe, Inc. and Pacific Bell —

Switch makers, *page 133*

Rx for net performance anxiety

HP/Tivoli team to pitch standard to measure application response

By Patrick Dryden

Like it or not, information systems departments must take the heat when users complain about network and system service. But until now, they lacked a common way to measure the performance of client/server applications.

Hewlett-Packard Co. and IBM's Tivoli Systems, Inc. this week will release an application programming interface that combines previously separate efforts to yield a universal tracking function for in-house developers and vendors.

The Application Response Measurement API promises to let administrators extend their systems and network management

Network Rx, *page 16*

Armed with answers

A common performance monitoring interface will help answer service-level questions such as these:

What's the end-to-end response time for distributed applications?

What's the actual performance end users experience?

Who uses the application, how often and in what way?

A PUBLICATION OF IDG

Inside Computerworld

June 24, 1996

News

NEWS

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Computerworld has won four awards from the Computer Press Association.

6 Asset management
Most companies are clueless when it comes to managing their desktop PCs, according to a recent study.

10 Data warehouses
Users may not be fully prepared for all the costs associated with a data warehouse.

14 PC Expo doings
Laptops were, far and away, the big news at last week's PC Expo trade show.

OPINION

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Japanese manufacturers have entered the U.S. PC market. But their wares are too similar to what's already available, except for the color, Paul Gillin says.

35 Web site analysis
David Strom urges webmasters to analyze their access logs to find out what visitors like and don't like about the Web site.

35 Customer service
Data warehousing is nice, but soon you'll need a new customer-care system that has real-time data, not just legacy data, Patricia B. Seybold says.

134 Cluster fever
Clusters are underrated for general purpose and parallel computing, Charles Babcock says.

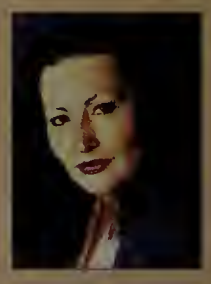
Data warehousing
What can a data warehouse buy you? About $1 million in new revenue, says Bill Parker, Agway's CIO.

See our special section following page 68

WOMEN IN INFORMATION SYSTEMS

Ms. MIS

Sexism: It's still there



Sexism hasn't disappeared from IS in the '90s. It's just more subtle. See Laura DiDio's Ms. MIS.

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Despite IBM's recent Internet announcements, don't fire up the AS/400 as an electronic commerce engine just yet.

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Major RDBMS vendors are racing to add text-management features — and confusing users in the process.

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Users are impatient for libraries of plug-and-play business objects that will speed up client/server development.

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CDPD networks are here — but where are the customers?

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Ninety years after his death, painter Paul Cezanne, long considered to be the father of modern art, lives on the World Wide Web.

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Northern Ireland's agriculture and farming industry uses messaging and document management software to help deal with mad cow disease.

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Most webmasters build their pages by using basic editors and utilities, a *Computerworld* survey reveals.

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This high-school Web club is a class act.

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After eight years, Robert Avallone has found career success and happiness as an IS "temp."

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Are you stuck on how to create a Web page? Here are some sites and books that may help.

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THIS WEEK IN COMPUTERWORLD

REAL-TIME SERVICE
Analyst **Patricia B. Seybold** discusses the next generation of customer service, systems.

SEXISM IN IS
Gender bias still lurks, but it's much more subtle in today's IS departments. Join **Laura DiDio** online to tackle this topic.

SAFETY FIRST
Tell us how confident you are with your firewall product in this week's **QuickPoll**.

www.computerworld.com

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— Meg Whitman, CEO, FTD Inc.

FTD,® a company known the world over for its fine floral arrangements, needed to streamline its international order process. They used to rely on fax, phone, telex and cable to transmit orders.

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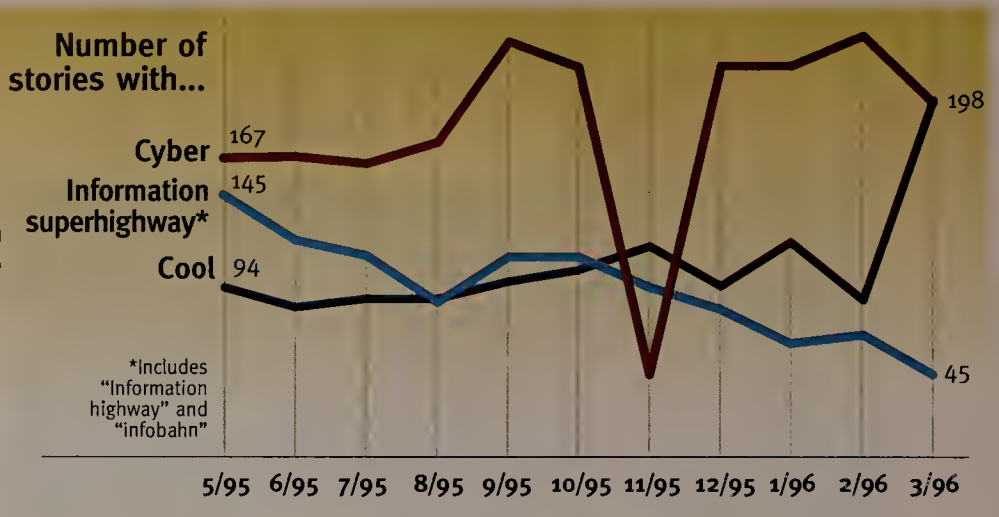
Cool Cybercliche Index

A search of the *ComputerSelect* CD-ROM of computer trade press articles finds the number of stories that contain these industry cliches. The "cyber" prefix is going strong – except for a bad month in November – while "information superhighway" and its ilk are (thankfully) on the way out. "Cool" is, well, always cool. True convergence was achieved in March when "cool" and "cyber" reached the same level of cliche-dom.

– *Mitch Wagner*



alt.cw

rules of thumb

Add 30%
to the schedule of a software project to account for **unexpected delays** and **problems.**

At a typical company, one LAN administrator can support
40 to 50 users.

Remember that almost all business is painfully simple.
Strive to demystify.

Because many companies **electronically scan** resumes into a database, make sure your resume is
easily scanned.
Laser-print the resume with **black ink on white** (or light-colored) paper and **mail it**. Don't fax, fold or staple it. Avoid fancy fonts, shading, borders, italics and underlining.

Reusable software costs *20% to 55% more* to develop. Savings from reuse won't be achieved unless a component is reused at least three times.

A **5% change** in the price of **IBM stock** causes a nearly
16 point change
in the **Dow Jones Industrial Average** index.

Compiled by Mitch Betts

Sources: *On Time, On Budget* by E. M. Bennatan (QED, 1993); *Client/Server: The 10% You Need to Know* by Randy Langel (IBM, 1995); *Never Confuse o Memo with Reality* by Richard A. Moran (HarperBusiness, 1995); Drake Beam Morin, Inc., New York; U.S. General Accounting Office, Washington; *Woll Street Journol.*

Deja vu all over again

When it comes to reporting about the 'net, everything old becomes new again, noted Los Angeles-based *Reason* magazine. On March 30, *The New York Times* ran an Associated Press story about an Argentine student who was arrested for allegedly hacking into U.S. military computers. The case, the story said, involved the "first court-ordered wiretap of a computer network."

Three months earlier, on Dec. 30, 1995, a staff-written *New York Times* story reported the arrest of a German engineer who allegedly sold cellular phones programmed with stolen numbers. This article said the case involved "the first court-approved wiretap on the Internet."

Mike Godwin, counsel for the Electronic Frontier Foundation, quipped, "I'm sure we haven't seen the last first Internet wiretap."

Send contributions of offbeat news, lists and anecdotes to mbetts@cw.com.

Software from Tecnomatix Technologies in Novi, Mich., helps manufacturing engineers and ergonomists simulate human operations amid the robots and machines. The Robcad/Man software uses biomechanical human models so factory engineers can design safer work environments and meet government safety guidelines.

News to ponder

- **If you leave the word "apple" out of the address for Apple Computer's Cyberdog Web site (www.cyberdog.apple.com), you'll go to the site for a dog training academy in Phoenix.**
- **Bangladesh recently got its first Internet service provider and Web site (www.bangla.net), Reuters reported.**

The DataMyte 3053 Data Collector from Allen-Bradley in Minnetonka, Minn., is used in quality-control applications — such as tracking the measured gaps and alignment of car doors and hoods — on the factory floor. This rugged unit can even be dropped on the floor and is sealed against dust, oil and grease contamination. The DataMyte 3053 costs $2,400 to $6,000, depending on options.

Computerworld named best tech magazine

NEW YORK

Computerworld captured four awards at the 11th annual Computer Press Awards ceremony held here last week.

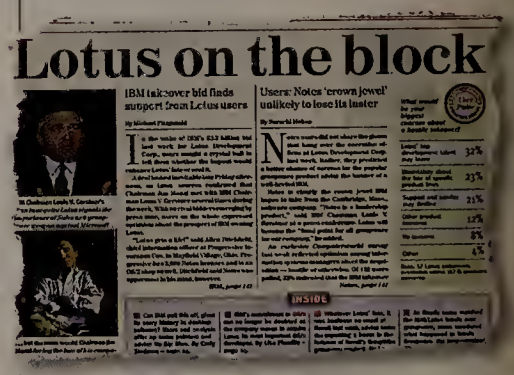
The newspaper took first place in the overall category of Technical Trade Magazine.

Computerworld also won first place in the Breaking News category for last June's coverage of IBM's hostile takeover of Lotus Development Corp. The primary writers on that package of stories were Michael Fitzgerald and Suruchi Mohan.

Two runner-up awards were also presented to *Computerworld* staff members. The Investigative News Story runner-up was "Ticket to Nowhere," an investigation of programming trade schools written by Joseph Maglitta that was published in December.

Receiving runner-up honors in the Best Technical Feature category was *Computerworld*'s November 1995 "Guide to High-end Desktop PCs."

"*Computerworld* is a broad-based newspaper, so it's particularly gratifying to win awards in news, features


Lotus on the block

IBM takeover bid finds support from Lotus users

Users: Notes 'crown jewel' unlikely to lose its luster

and technology categories," *Computerworld* Editor Paul Gillin said.

"The fact that we won in such a nice variety of categories is reflective of the wide background in journalism on the staff and a testimony to the broad skills and deep knowledge our staff brings to bear on issues critical to our readership," Executive Editor Maryfran Johnson said.

Computerworld previously won Computer Press Awards as Best Computer Newspaper in 1987, 1992 and 1993.

"These four awards are particularly gratifying because they highlight a key strength of the staff — teamwork," said News Editor Patricia Keefe. Noting that the winning entries all showcased the successful execution of intradepartmental efforts, she added, "I am privileged to work with the best editorial staff in the industry."

Oracle Wins 11 of 14 Golds in Computerworld Application Tools Survey

Oracle Designer/2000
Best Technology

Oracle Developer/2000
Best Technology

Oracle Designer/2000
Best Service/Support

Oracle Designer/2000
Best Price/Performance

Oracle Designer/2000
Best Documentation

Oracle Designer/2000
Most likely to purchase

Oracle Designer/2000
Prefer to do business with

Oracle Designer/2000
Installed in Company

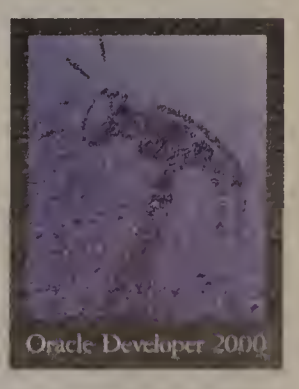
Oracle Developer/2000
Best Service/Support

Oracle Developer/2000
Best Documentation

Oracle Developer/2000
Prefer to do business with

When *Computerworld* surveyed 1,500 information technology professionals, they named Oracle's Designer/2000™ and Developer/2000™ their #1 choice in these application development categories. That's because Designer/2000 and Developer/2000 provide the most powerful tool suite for developing client/server and web applications, which scale from the workgroup to the enterprise.

For award-winning client/server application development and a copy of the *Computerworld* study, call 1-800-633-1071, ext. 8134 or find us on the Web at http://www.oracle.com/



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Asset management can shave big bucks

By April Jacobs
NEW YORK

Despite spending enormous sums on desktop computing, most companies don't have a clue how to manage those assets and costs, and it is costing them millions of dollars, according to a recent study by ICR Survey Research Group in Media, Pa. The report was presented last week at PC Expo.

Another impressive figure comes from Gartner Group, Inc. in Stamford, Conn., which estimates that companies that employ best practices in asset management can cut networked PC costs by 26%, or $3,100 per node, annually.

STEVEN BORNS

The 140,000-plus attendees *at PC Expo sample the latest in laptops, multimedia PCs and network appliances from major U.S. and Japanese vendors*

Even though users can save an average of 13% on their total information systems bill when they have an asset management plan in place, fewer than half of the 200 companies ICR surveyed had one. Only 12% of the survey's respondents met the standards of effective asset management. Respondents were IS professionals at some of the largest user sites in the country, spanning a variety of industries.

The average IS budget of those surveyed was $11.09 million, according to the study, which was commissioned by Rosemont, Ill.-based Comdisco, Inc., a provider of integration, asset management and leasing services.

The study echoed conclusions by Gartner Group, which recently conducted a similar study with similar results.

Managing desktop computer assets encompasses everything from a central database for tracking assets to standards for purchasing software and hardware configurations. Bill Cornfield, president of consultancy The Windows User Group, Inc. in New York, said asset management is becoming a critical issue for companies as their information technology infrastructure grows.

"Most companies are having a harder and harder time keeping track of what they have. They don't even know what they've paid for and what they've got. And licensing is also becoming a big issue," he said.

Gartner's research indicates that the average cost of a networked PC is $11,900 annually when costs such as hardware, software, support, administrative services and end-user operations are factored in. "We see asset management as a means to an end," said Joseph Pucciarelli, research director at Gartner Group.

Penny-pinching

How to bring distributed computing costs under control:

- Write a plan that includes a strategy for tracking the acquisition, use and disposal of distributed technology
- Get approval from senior management to implement an asset management plan
- Adhere to no more than three standard configurations
- Track the cost of hardware, software, maintenance and support
- Develop a database to track assets from procurement to disposal
- Distribute software electronically
- Consider leasing distributed assets to reduce costs and improve migration

Source: ICR Survey Research Group, Media, Pa.

Office 97: 'Fat' is where it's at

By Lisa Picarille
NEW YORK

Thin may be coming into vogue for client software, but Microsoft Corp. is bucking the trend as it fattens up Microsoft Office.

Microsoft's "more is better" strategy has made Office the suite leader with 90% market share. But some users and analysts said Office 97, due out by the end of the year with new Internet features and workgroup functionality, is bloated.

See pages 14 to 16 for more show coverage

"Microsoft is doing a great job of adding value to Office, but they are at risk of losing market share if they continue to develop a fat client," said Eric Brown, an analyst at Forrester Research, Inc., a market research firm in Cambridge, Mass.

"They are not focusing on the emerging Internet client. Office 97 is Microsoft's last turn at the wheel to dominate the desktop. Suite products will start to look very different as the desktop environment changes," he added.

For example, rival Corel Systems Corp. is readying a Java-based suite of trimmed-down applications that is slated to be delivered by year's end [CW, May 27].

"Corel's strategy is not going to skyrocket them to the top this year or next, but it clearly gets them ahead of the curve," Brown said. "The idea of not having to install desktop software is a good one."

"Office has turned into a pig," said an information systems manager at a large West Coast manufacturing company. "We are looking at ways to trim back applications."

But one Office user said the all-things-to-everybody approach makes him feel secure.

"Office is getting huge, but it doesn't bother me that there are portions of the products we don't use. I like the security of knowing there are features that, even if I don't use them today, they will be there tomorrow if I need them," said John Mooney, owner of The Positive Image, a graphics and photography company in Houston.

Others agreed.

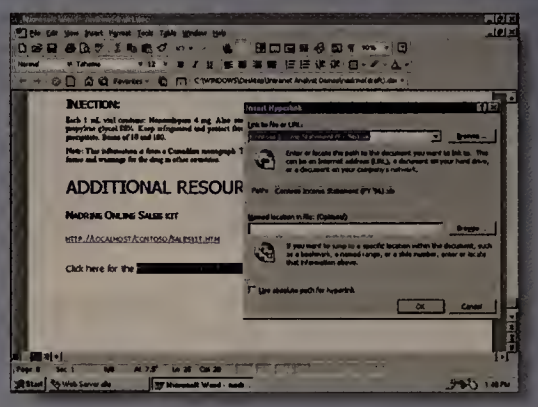
"The skinny client idea may be useful to some limited niches of users, but for the broad community, there is always someone or another within a large company that wants every function," said Michael Packer, executive vice president of technology systems and operations at Simon & Schuster, Inc., a New York-based publishing house that has more than 6,000 Office users.

Microsoft officials said they don't plan to put Office on a diet.

"We don't plan to offer a 'lite' version of Office because we don't have that strategy that less functionality is really solving the problem," said Michael Graff, Office group product manager. He said Microsoft will also continue to add functionality to Office via ActiveX controls and components.

Office 97, demonstrated at last week's PC Expo, will pack more functionality into the suite by including World Wide Web-related document-management features and Outlook, a new desktop information management application.

Office of the future



Microsoft's Office 97 application suite is packed with Internet-related features and other enhancements:

- Hyperlinks to and from any Office file (see screen above)
- Automatic conversion of Word, Excel and Access files to HTML
- Support for Visual Basic for Applications and OLE across all products in the suite
- Web FindFast to search and index across files and servers
- Office Web tool bar to navigate among linked documents
- Access to ActiveX controls from Word, Excel and PowerPoint
- A shared drawing engine across the suite

IBM sticks to Ramac array upgrade plan

Product revamp eases user concern over fallout from StorageTek resale deal

By Michael Goldberg

IBM last week announced enhancements to its Ramac storage array controller, and company executives said users should expect the next-generation Ramac 3 before year's end.

Coming on the heels of its deal to resell Storage Technology Corp.'s Iceberg and Kodiak arrays, IBM's pronouncements were meant to show the company would continue to invest in the Ramac family of storage subsystems, observers said.

"This is important to people who have invested in Ramac ... and might have been concerned that the classic Ramac was going to be replaced in the near future by StorageTek products" sold by IBM, said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

Enhancements to IBM's 3990 Model 6 Storage Control systems:

- "Sequential detect" function speeds access of sequential records
- Increased controller cache, from 2G bytes to 4G bytes
- Dynamic address switching for Peer-to-Peer Remote Copy for disaster recovery at backup data center
- Increased Escon distances linking two control systems, from 14.5 miles to 27 miles
- A track format to move data from older 3380 systems to Ramac arrays

IBM's long-range plans for integrating StorageTek and Ramac products remain "somewhat unclear," McArthur said, but IBM appears committed to delivering on its previous pledges, including Ramac 3.

Ramac 3 would double the capacity of Ramac 2 to 360G bytes and provide corresponding performance improvements to the 3990 Model 6 disk controller.

Ahead of schedule

James Vanderslice, general manager of IBM's storage division, said users should expect to see Ramac 3 in the fourth quarter — three months earlier than IBM had said in the past.

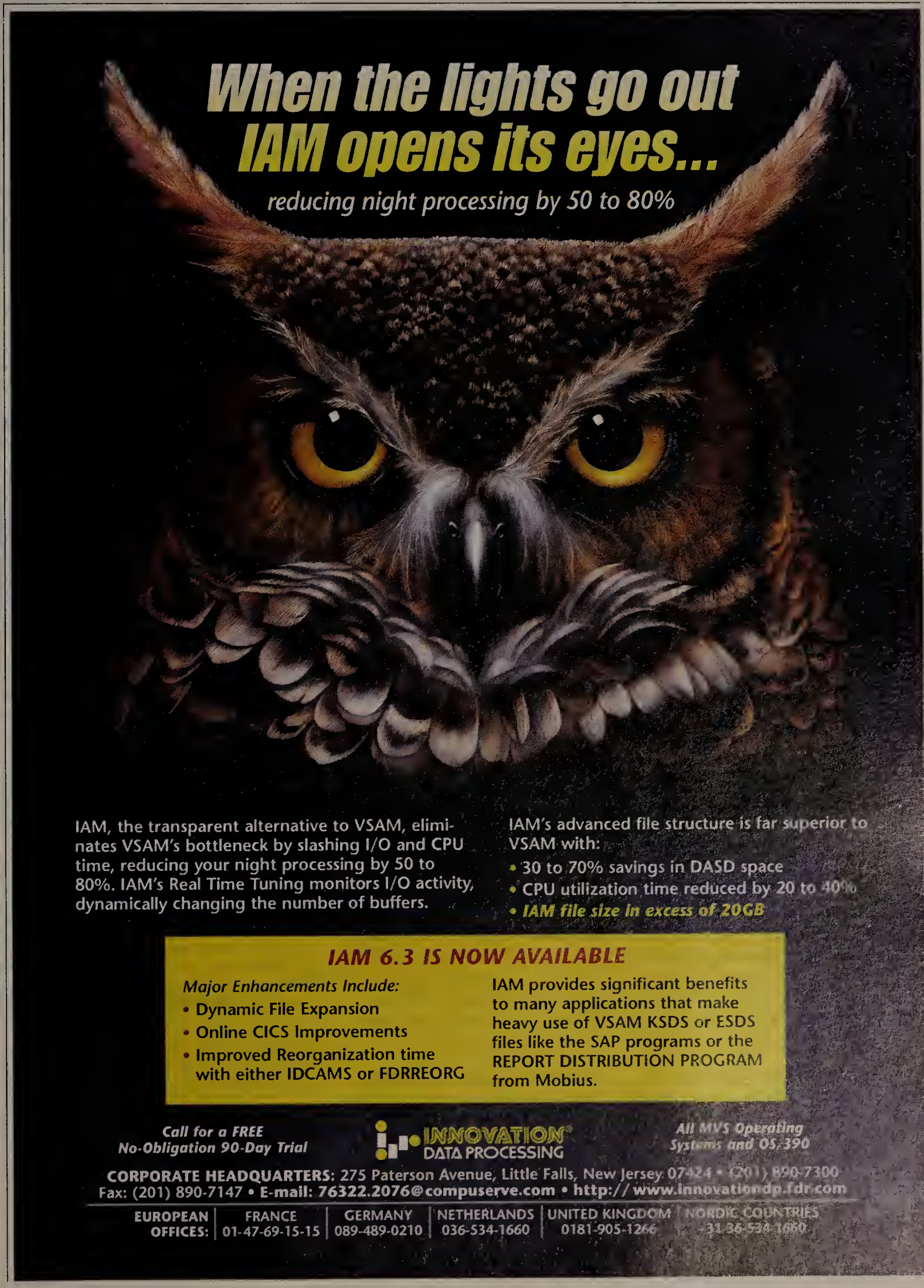
In addition, IBM will offer a 720G-byte storage configuration that sandwiches two Ramac 3 units around a cabinet that contains a pair of slimmed-down 3990 controllers, said Mike Harrison, director of storage marketing at IBM. While taking up less space, each of the arrays would still need a controller to manage its data, he said.

The enhancements to the 3990 Model 6, a stand-alone controller system that works with Ramac and Ramac 2 disk arrays, include a Peer-to-Peer Remote Copy capability for disaster recovery at a backup data center and a function that improves performance on applications that require access to many sequential records (see chart).

Roger Deitz, a mainframe support specialist at the newly merged utility of Puget Sound Power & Light Co. and Washington Natural Gas Co. in Bellevue, Wash., said IBM's new track format feature gives his company an orderly process to move its data from older 3380 format disks to newer Ramac storage.

IBM also plans a data-migration service by year's end to help users move data from any System/390-compatible storage system to Ramac.

Senior editor Craig Stedman contributed to this story.



Credit and credibility

VeriFone automates process of verifying credit-card info over 'net

By Mitch Wagner

VeriFone announces credit-card verification software

Product	Function	Availability	Price
VPOS	Sits on merchant's Web server and collects credit-card numbers	September	$1,500
VGate	Verifies credit cards over the Internet and sits on the bank's server	September	Custom pricing

Shel Kaphan, webmaster at Amazon.com, Inc., figures the technology announced last week by VeriFone, Inc. will save his staff lots of wear and tear on their tired tootsies.

VeriFone in Redwood City, Calif., has announced software designed to automate the process of verifying credit-card information over the Internet. Merchants can install VPOS, a software module, on their World Wide Web servers. VPOS communicates with VGate, a complementary software package, on an Internet server run by the bank that sponsors the merchant's credit-card accounts.

That could be a big help for Amazon.com in Seattle. The bookstore conducts sales over the Web. Like a lot of online businesses, the company currently has no satisfactory way of processing credit-card transactions, said Kaphan, vice president of research and development at the firm.

Currently, Amazon.com copies credit-card information from its Web servers to special processing software. "We create a file that has the credit-card information, put it on a floppy, carry it over to the DOS PC and process it like any merchant," Kaphan said.

He said he expects that a fully automated package will be faster, more reliable and more scalable than "Sneakernet."

VeriFone's product is the latest in a

RALPH KELLIHER

series of offerings that enable credit-card approvals over the Internet. Netscape Communications Corp. last month announced LivePayment, which will compete with VeriFone's offering, although VeriFone also supports the Netscape scheme. CyberCash, Inc. in Reston, Va., has offered credit-card verification services over the Internet for 14 months.

But VeriFone, a $387 million company, brings something to the table that the others can't: credibility in the field of point-of-sale systems. When a clerk in a store anywhere in the U.S. swipes a customer's credit card through a scanner to approve a purchase, three times in four the machine is a VeriFone, said Roger Bertman, vice president and general manager of the Internet commerce division at VeriFone.

Lack of trust

But many merchants are still afraid to entrust credit-card verification to the insecure environment of the Internet. The Virgin Retail Group in Beverly Hills, Calif., plans to launch a site for retail sales on the Web early next month, but will handle credit-card transactions by telephone for the next six months to a year. That's when the company believes the technology will be mature enough to be worth trying.

"The technology is going to keep expanding," said webmaster Brian Regan. "At the appropriate juncture, we'll look into expanding it into our Web site."

IBM Web-enables development tools

By Frank Hayes

IBM is getting serious about helping information systems departments deploy corporate applications on the World Wide Web.

The company last week said add-ons for its VisualAge Smalltalk and C++ development systems will let corporate developers build applications that users can access across the public Web or private intranets.

IBM's first tool set for Web-enabling applications, VisualAge for Smalltalk Web Connection, will ship July 25 and cost $1,499. A version for VisualAge for C++ will follow soon, said Skip McGaughey, IBM VisualAge marketing manager.

"It makes so much sense to be able to run applications from a standard interface like a Web browser and to have all the application logic and program control centralized on the server side," said Loren Abdulezer, president of Evolving Technologies Corp. in New York. The IS consultancy for pharmaceutical companies has beta-tested the tool kit.

The Web Connection tool set will let developers retrofit VisualAge Smalltalk applications to use the Web as a front end with minimum effort, Abdulezer said.

The tool set works with commercial Web servers from Netscape Communications Corp. and Microsoft Corp. and with popular free Web servers.

The Web-based approach means local and remote users can access applications regardless of the operating system they use. The approach also can cut network bandwidth requirements compared with conventional PC-based client/server applications, said Paul Knevels, a network support manager at AlliedSignal, Inc. in South Bend, Ind.

"All you're doing is interrogating the host from the client," said Knevels, whose developers have built Web-based applications with the Web Connection tool set. Because all processing takes place on servers rather than client PCs, network requirements are far less, he said.

IBM, others accelerate business object development. See page 52.

News Shorts

Netcom nightmare

It was a dark and stormy night Tuesday for technicians at **Netcom On-Line Communications Services, Inc.** A bad line of programming code in the software that controls the routers in the Internet access provider's system crashed the entire service. Netcom customers were without service from about 7 p.m. EDT to about 8 a.m. the next day. But the technicians were left in peace to get the system back up and running. Company officials said there were so many complaints from its 400,000 customers that the phone system also went down.

AMD anticipates Q2 loss

Advanced Micro Devices, Inc. expects a second-quarter loss resulting from a decline in flash memory sales and stiff competition in the microprocessor market. The company predicts total sales will drop more than 15% from the first quarter, when AMD earned $25.3 million on revenue of $566.5 million. Flash memory accounted for about one third of the company's total sales during that period.

Engibous named CEO at TI

Texas Instruments, Inc. has named Thomas J. Engibous, 43, as the company's president and CEO. The board also named James R. Adams, 57, as chairman. A 20-year TI veteran, Engibous served as president of TI's Semiconductor Group since 1993. He replaces William P. "Pat" Weber, who was appointed acting president and CEO last month after the death of TI's longtime chairman and CEO Jerry R. Junkins.

Sun turns red in Java flap

Sun Microsystems, Inc. last week publicly apologized to **Javan Enterprises, Inc.**, a Nashville electronic parts company. Javan was one of the businesses whose domain name includes the word "java" to whom Sun lawyers sent threatening letters last month. JavaSoft president Alan Baratz called the letter to Javan "a mistake on our part" but said Sun will continue to pursue improper uses of its Java trademark.

Oracle posts strong growth

Oracle Corp. closed its fiscal 1996 fourth quarter with $1.4 billion in revenue, a 44% increase from the $1 billion recorded during the same period last year. Net income rose 47%, from $181 million in fiscal 1995's fourth quarter to $266 million in this year's fourth quarter. For the year, Oracle posted $4.2 billion in revenue, a 42% increase from fiscal 1995's $2.9 billion. The company's net income also went up, from $442 million in fiscal 1995 to $636 million this year, a 44% increase.

Compaq, CA link products

Compaq Computer Corp. plans to announce in the next few weeks an agreement to integrate its Intelligent Manageability server and desktop management products with the systems management software in **Computer Associates International, Inc.**'s CA-Unicenter, sources at Compaq said.

IRS loses computer revamp

In the wake of the **Internal Revenue Service**'s failed — and costly — computer modernization program, Congress has chopped funding for the project and handed over the reins to the **Department of Defense**. The Pentagon will be responsible for choosing a new contractor to handle the computer efforts at the IRS.

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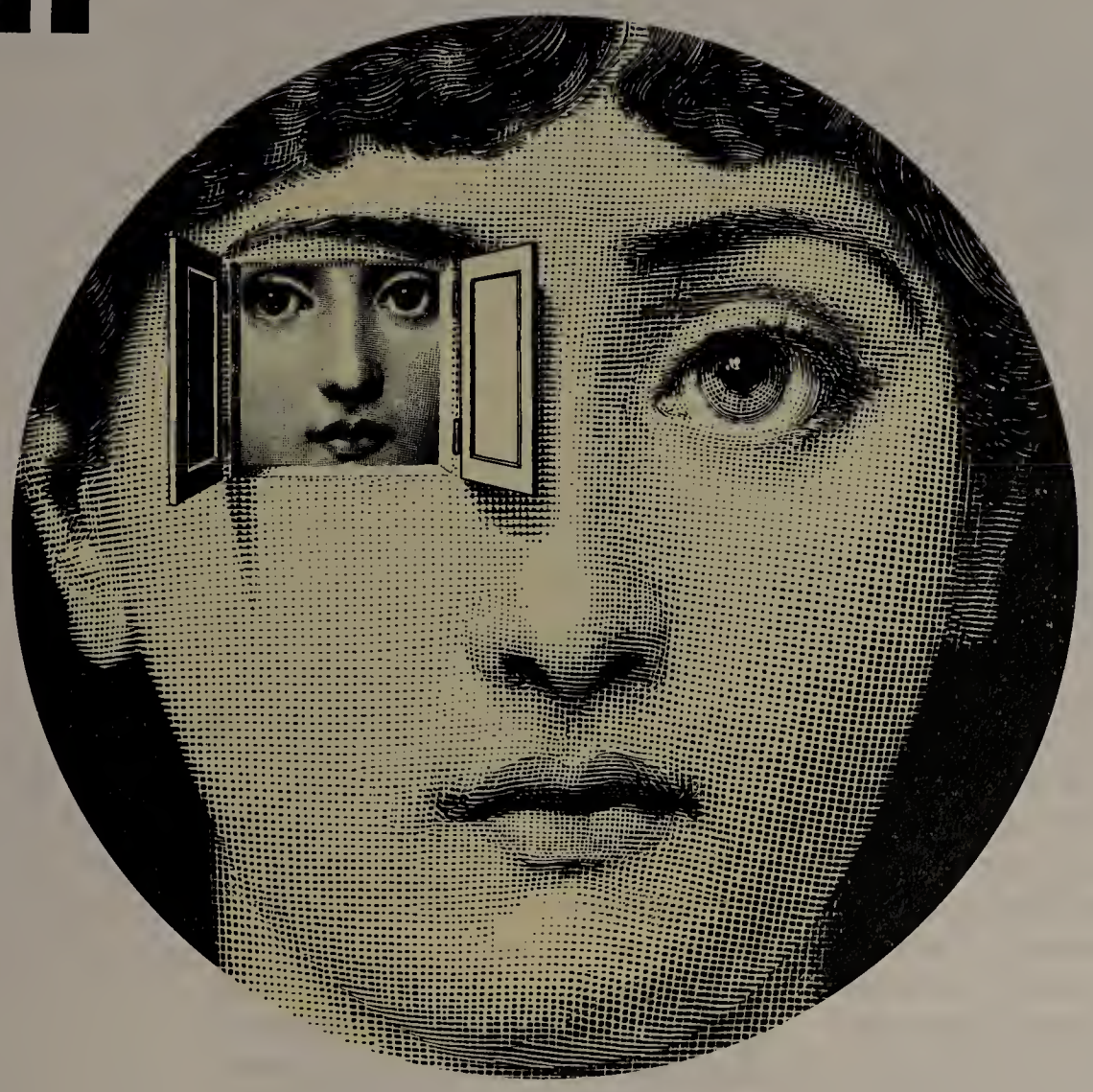

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ABX

Data warehouses' back-room $urprise

By Dan Richman

As more users start sifting through data warehouses, most companies accept that they will have to spend more in software licensing fees to give users data access tools.

The surprise for many is that they will also have to bump up outlays for tangential items such as increased staffing on the help desk and the cost of distributing software to all those new users.

Users could see back-end costs double — or grow even more — as companies move from off-the-shelf database software to client/server applications that must be tuned for each site's use, said Aaron Zornes, an analyst at Meta Group, Inc. in Stamford, Conn.

The costs could be generated by the need to distribute software to all end users and further tweak it for their needs as well as provide for all its permutations, he explained.

"Help desks are already going nuts with users using off-the-shelf query tools," Zornes said. "Imagine how much worse it will be when users get really powerful, IT-assisted query tools that they don't know how to use at all. Or when they start feeling their freewheeling power" and get into situations where they require help — for example, issuing queries so large that it ties up a server for hours.

A full 12% of the 500 attendees polled at Data Warehouse World in Santa Clara, Calif., earlier this month said they plan to create or expand warehouses to accommodate 500 or more users, according to show sponsors Meta Group and Digital Consulting, Inc. in Andover, Mass.

The same percentage of attendees said their warehouses will be 1T byte or more in size.

Chief information officers at several organizations said they aren't ready but are willing, if they must, to pay the price for better access to data.

"We're just moving from NetWare to client/server, and we're seeing that just as it places more of a strain on hardware, it also stresses staffing and application development," said John Siegel, CIO at Legato Systems, Inc.

The Palo Alto, Calif., software developer is moving to Informix Software, Inc.'s On-Line relational database management system.

"As we get into client/server warehousing, those costs are definitely something we'll have to plan for," Siegel said.

Sidestepping fees

David Kruglov, CIO at Data Track Systems, Inc., a real estate services provider in Carlsbad, Calif., said he is trying to avoid extra costs by staying with Microsoft Corp.'s SQL Server RDBMS and developing SQL-based user tools in-house using Microsoft's Visual Basic and Sybase, Inc.'s PowerBuilder. That avoids royalty and run-time charges.

If costs do mount up for a warehouse that consolidates all the data within the 17 systems under development within the state of California, it will be worth it, according to John Thomas Flynn, CIO for the state.

Now considering several vendors for a warehouse, the state won't be creating one for at least a year, Flynn said. But in Massachusetts, where he served as CIO for more than two years, "the benefits of a warehouse so vastly outweighed the financial outlays that we were willing to pay the price."

More growth

The data warehouse market, which includes hardware, software and services, will continue to grow at a 40% compound annual rate to $8 billion in 1998, up from $2 billion in 1985, according to Meta Group.

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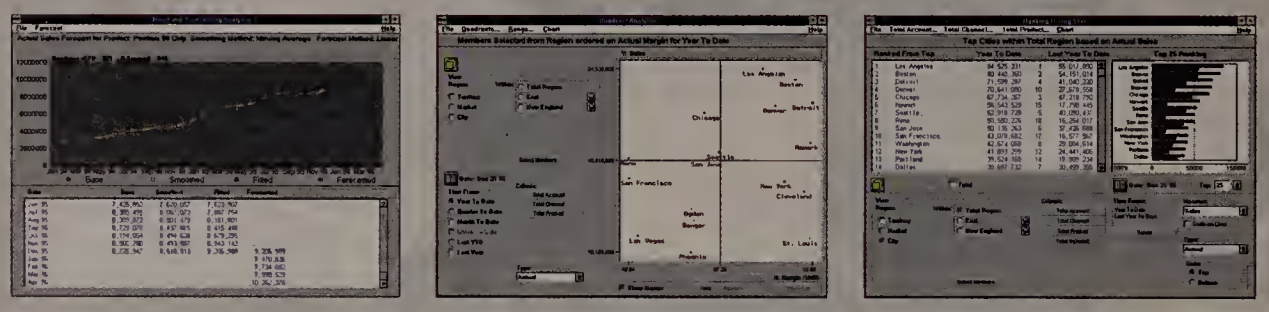

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User group steps into the light

Independent Sun group comes back from bankruptcy, slates Boston conference

By Craig Stedman

Trying to regain credibility after three years of bankruptcy proceedings, Sun Microsystems, Inc.'s independent user group this week will hold its first major conference and exhibition since late 1993.

The Sun User Group (SUG), perhaps the ultimate poster child for troubled user groups, hopes the event in Boston will put a public face on its efforts to mend tattered relations with its reduced membership and Sun.

The group has already made some progress by restoring formal contact with Sun and boosting individual memberships from a low of 2,000 to about 4,000 today. But that's still far short of the 7,000 members it once had, and some big Sun customers said SUG remains off their radar screens.

"They've got a lot of credibility to build again," said Don Baune, manager of computer operations at the University of Utah's Department of Radiology in Salt Lake City. Baune was once a member of SUG's board of directors but said he hasn't had any contact with the group for a year or more.

Different route

Dunlop Tire Co. in Amherst, N.Y., also has given SUG a pass. It relies instead on direct ties to Sun and more informal mixing with other users. "We just haven't seen the need" to get involved with the user group, said Dennis Courtney, chief information officer at Dunlop.

Alexander Newman, executive director of SUG in Brookline, Mass., said the group hopes to attract about 2,500 people to this week's SUG East trade show. But the companion technical conference will be relatively miniscule. Not wanting to bite off more than it could chew, SUG made room for only 130 attendees, he said.

Dunlop's Dennis Courtney *says that if SUG's conference is successful, 'we'll consider checking it out'*

SUG's last conference was in December 1993. By then, the group was reeling from financial problems that had forced SUG to file for Chapter 11 bankruptcy protection the previous spring. Official Sun contact with the user group was withdrawn after a series of disagreements.

As a result, membership dropped like a rock. "People were deserting us, and rightfully so," Newman said. "We weren't doing anything."

SUG's meetings "really suffered" content-wise after its ties to Sun were severed, said Baune, who organized one of the group's 1992 conferences.

"I don't think it's possible to stand on your own as a user group," he said. Re-establishment of a formal link with Sun earlier this year is "a major step" toward making SUG useful again, Baune added.

Financial concerns

The user group also is in the black again and recently had a financial reorganization plan approved in bankruptcy court, Newman said.

In the next five years, SUG has to pay its creditors $60,000, a figure that Newman described as "big but not unmanageable."

For Sun, the lack of a healthy user group has been embarrassing as it tries to become a bigger factor in the commercial server business, said Jean S. Bozman, an analyst at International Data Corp.'s office in Mountain View, Calif.

Szygenda's agenda at GM: reshape IS in post-EDS era

By Robert L. Scheier

General Motors Corp. last week hired Ralph Szygenda, the "tough but fair" chief information officer at Bell Atlantic Corp., to rebuild its internal computing capabilities.

Szygenda will face two major challenges. One is to impose order on the highly autonomous information systems groups within GM's operational units. The other is to ensure that outsourcing vendor Electronic Data Systems Corp. provides the best service at the best price as it seeks to build its non-GM business after being spun off from GM.

Not much clout

To make matters more complicated, Szygenda has less clout with EDS than other CIOs have with their outsourcers because GM is obligated, under the terms of the spin-off, to buy at least 85% of its IS needs from EDS until 2000.

Former co-workers said Szygenda is up to the job.

"Ralph is a consensus-builder," said Laraine Rodgers, who worked with Szygenda at Bell Atlantic as vice president of information processing. She said he was well-respected and valued by other senior executives at the telecom- munications firm.

But Szygenda can also muster the facts to make hard decisions stick, said George Heilmeier, president and CEO of Bellcore in Morristown, N.J. Heilmeier worked with Szygenda at Texas Instruments, Inc. in the late 1980s and early 1990s.

"Ralph is the kind of manager who manages by the facts," Heilmeier said. "He collects real data ... that essentially quantifies the difference a particular organization is making to the company."

Ralph Szygenda's *former co-worker says that although he will have to make hard decisions at GM, he will be 'tough but fair'*

No hard feelings

Despite losing Ralph Szygenda to General Motors, Bell Atlantic took pains to praise him for establishing "new standards and technical career tracks" in Bell Atlantic's IS organization.

And he is quick to take action if the organization isn't working up to snuff. "He's not the kind of guy that will let a situation fester that needs fixing," Heilmeier said.

When it comes to negotiating with EDS, Szygenda will be "tough but fair," Heilmeier predicted.

Bell Atlantic is one of the largest customers of Bellcore, which provides software, engineering and other services to telecommunications companies.

Szygenda and officials at Bell Atlantic and GM declined to be interviewed.

At GM, Szygenda will report to Vice Chairman Harry Pearce and will chair GM's recently formed Corporate Information Council, which includes the IS heads from all of GM's business units.

Szygenda was CIO at Bell Atlantic beginning in 1993, following his stint as CIO at TI. Before he was named to that post in 1989, he spent 17 years in roles including product and IS management.

Organization lends hand to user groups saddled with problems

Little funding, low membership at issue

By Thomas Hoffman
NEW YORK

You could call it a user group for user groups.

Last week, a new organization called Technology Association Leaders' Council (TALC) held its first meeting at PC Expo. TALC was formed to help user groups deal with issues such as declining membership and inadequate funding, said organizer Bruce Freeman, president of the Northeast Technical Association, a consortium of computer hardware and software vendors.

User groups

"Our goal is to provide education and guidance" to the 300 user organizations throughout the U.S, Freeman said. He is also president of ProLine Communications, Inc., a marketing and media relations firm in Livingston, N.J.

Membership woes

Most of the 50 attendees at the meeting said they are most concerned about declining enrollment and membership retention. Paul Ziems, director of the DPMA-Association of Information Systems Professionals, said his group's enrollment peaked at 25,000 in the mid-1980s before shrinking to 15,000 today.

"We're stabilized now, but we have to figure out how to retain and grow our membership," said Ziems, who is a data center manager at Northrop Grumman Corp. in Bethpage, N.Y.

Freeman and other speakers offered several suggestions to boost enrollments, such as forging closer relationships with the trade press and creating links between the World Wide Web sites of user groups and their members.

Finding a niche

Other user groups are fighting an identity crisis. "A few years ago, women's organizations used to be a big deal," said Leona M. Seufert, "WebMistress" for the New York City chapter of the Association for Women in Computing. "Now, we find ourselves trying to get women to join us instead of other user groups," added Seufert, who is also president of StarQuest, a multimedia consultancy in Roselle Park, N.J.

Freeman said the group may meet again at major trade shows in the fall. For more information about TALC, call Freeman at (201) 716-9457 or visit TALC on the Web at www.thevine.com/talc.

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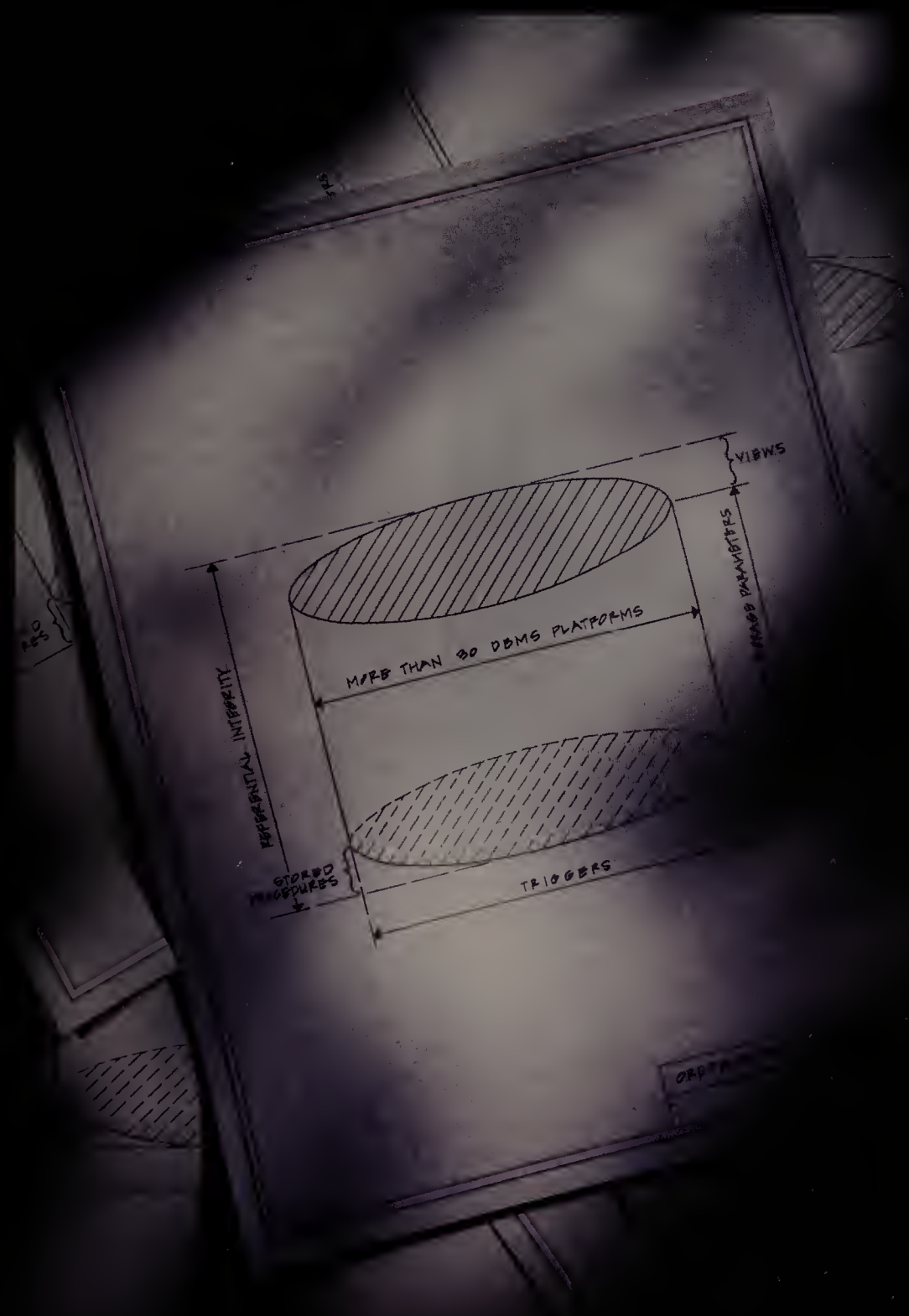

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Mobile computing tops show agenda

By Mindy Blodgett and Bob Francis
NEW YORK

Don't be surprised if they call it Laptop Expo next year.

Mobile computing grabbed the spotlight here last week at the annual PC Expo, elbowing aside traditional desktops.

STEVEN BORNS

UJA's Sarah Szmuller *says the number of mobile workers at the firm is rapidly expanding*

Several product announcements added to the buzz, but even more significant was a change in attitude, according to industry observers and attendees.

"In the past year, notebooks have gone from being adjunct devices to the main event," said Tim Bajarin, an analyst at Creative Strategies, Inc. in San Jose, Calif. "And that trend will continue." But as more workers hit the road with the latest in notebook technology, the strain on corporate information systems departments is increasing, industry analysts and users said.

"It's really becoming an issue for me, how to handle the mobile workers," said Josephine M. Wilt, a field service manager in IS at Bayer Corp., a pharmaceutical company in West Haven, Conn. "We're getting more and more help desk calls from our sales force."

Sarah Szmuller, IS manager at the United Jewish Appeal (UJA) in New York, said, "We only have a handful of mobile workers now, but that is growing really fast. We have to get a better handle on it."

The notebook makers are rising to the challenge. Compaq Computer Corp. in Houston last week added its Intelligent Manageability features — including asset, security and fault management — to its Armada notebook line.

Intelligent Manageability features were already offered on the company's servers and DeskPro systems. It gives the portables some of these same features when attached to a corporate network.

STEVEN BORNS

Bayer's Josephine M. Wilt *says more mobile workers means more calls to the help desk*

Improvements to come

Other notebook PC vendors are expected to add better mobile support and asset-management features to their products, according to Randal Giusto, an analyst at International Data Corp. in Framingham, Mass.

"Compaq may be ahead of the curve but only by about a month," Giusto said. "IS managers are crying for it, so that will change."

Although the notebook market continues to climb, there is some controversy about the 150-MHz Pentium chips that Intel Corp. is slated to ship in August. Some vendors worry that users won't pay for a processor that yields only a modest productivity gain over the 133-MHz chip.

Intel is expected to announce the 166-MHz notebook processor at the end of the year, and some analysts say smart users will wait for machines that contain that chip.

But some users say they want the faster chip.

"We'll absolutely look at machines with the 150," Wilt said. "Our users want the fastest and the greatest."

NT slide may slow desktop rollout

By Bob Francis

The expected wave of Pentium Pro PCs landing on corporate desktops may not occur before early next year as the time frame for Windows NT 4.0 ebbs later into the year.

Many corporate users and PC vendors were expecting an August delivery date for Microsoft Corp.'s Windows NT 4.0, with a new user-friendly interface. That, in turn, was expected to fuel demand for 32-bit desktop systems — primarily new Pentium Pros.

Windows NT is a 32-bit operating system that gains optimum performance on 32-bit hardware such as desktops with Intel Corp.'s Pentium Pro processor.

But those planned deployments may be delayed as Windows NT 4.0's debut slips to at least September, a PC vendor source said.

Microsoft hasn't issued a firm release date; the Redmond, Wash., software giant has said only that NT 4.0 will come out during the summer, which officially ends Sept. 20.

But many PC companies were planning on an August introduction, in time to begin selling to the corporate market by year's end, an official at a major PC vendor said.

"There's no reason to outlay the capital this year for Pentium Pro systems if it's not going to be implemented until next year," said an information systems manager at a New York financial firm, who asked to remain anonymous. "The way the PC business goes, you're probably going to either get a better price or better technology if you wait."

Forging ahead

But companies in the midst of a Windows NT rollout don't plan to hold back. "Our plans are on schedule," said Marvin Kay, an IS manager at General Motors Corp. in Detroit, which plans to deploy several Windows NT systems over the next year.

Analysts, however, have already lowered their predictions for Pentium Pro shipments.

"I projected Intel shipping 4 million Pentium Pros by the end of the year, and now my estimate is more like 3½ million," said James Poyner, an analyst at Oppenheimer & Co., a New York investment firm. He added that Intel in Santa Clara, Calif., didn't dispute his numbers.

But the timing of Windows NT 4.0 may not be the only reason some companies could hold off purchasing Pentium Pro systems.

"It's not just like moving from 486 to Pentium; you're also changing the operating system in many cases, and that's a much more difficult upgrade model than simply throwing in a faster processor," Poyner said.

Systems vendors, which may be stuck with the systems should Windows NT slip further, have built in safeguards for users and themselves. Most offer free upgrades from Windows NT 3.51 to 4.0 to customers who buy Pentium Pro systems now.

Comparison shopping

Prices for comparable Pentium/Pentium Pro systems

Processor	RAM	Disk drive	Monitor	Operating system	Price
180-MHz Pentium Pro	32M bytes	2G bytes	17-in.	Windows NT 3.51	Starts at $4,100
166-MHz Pentium	32M bytes	2G bytes	17-in.	Windows 95	Starts at $3,300

Vendors take stab at taming wild Web

By Kim S. Nash
NEW YORK

As the second summer of corporate Internet craziness unfolds, sophisticated utilities have started to sprout for the unglamorous task of maintaining World Wide Web applications.

Indeed, Web site management took center stage at Web X, a subexhibition at the PC Expo show here last week.

Several vendors, including NetManage, Inc. in Cupertino, Calif., and SoftQuad, Inc. in Toronto, unveiled maintenance and monitoring tools for intranets.

The smaller companies hope to make a buck, while bigwigs such as Netscape Communications Corp. and Microsoft Corp. work to complete their Web management products.

STEVEN BORNS

Chase Manhattan's Eugene Beinert *is waiting for 'real' management tools for intranets*

Netscape, for example, plans to build a Simple Network Management Protocol agent so systems management suites — Hewlett-Packard Co.'s OpenView, SunSoft, Inc.'s SunNet Manager and others — can monitor Web servers and other network devices. But that won't happen until early next year, a Netscape official said last week.

For now, most users must fend for themselves for Web management.

"We've had to write quite a bit of utilities on our own. It's an issue when you're thinking about an intranet as big as we are," said Eugene Beinert, vice president of global services at The Chase Manhattan Bank Corp. in New York. The bank plans to build a 60,000-user worldwide intranet by the end of next year. A pilot project with 2,000 to 3,000 users is already running, Beinert said.

But writing special management scripts can cause problems, said Ed Jung, vice president of development at Atlantic Internet Technologies, Inc., a Web hosting service in Red Bank, N.J.

Such scripts must often run outside core Web server functions, which can slow server performance, Jung said. "Anything you have to program is subject to programming errors," he added.

Jung said he recommends seeking out automated utilities, even freeware available on the Internet.

Not all the tools popping up now can perform all the functions that users say are important.

The next release of NetManage's Chameleon Web software, for example, will let webmasters prioritize Web server traffic over a network. But when it ships this fall, the product won't be able to map Web site content.

The following announcements were made at the show:

- **DocuMagixx, Inc.** in San Jose, Calif., said it this week will ship HotMapx, a Windows application that graphically maps how a Web site is constructed.
- **Maximum Information, Inc.** in San Francisco unveiled IntraChange, a utility that controls who can post information to an intranet.

DEC's ultraslims are ultrascarce

By Jaikumar Vijayan and Mindy Blodgett

Call it the latest feature of Digital Equipment Corp.'s HiNote Ultra II notebooks — slim availability.

Three months after the Maynard, Mass., company announced ultraslim notebooks sporting advanced features, Digital last week acknowledged it is running short of supplies.

Notebook computers

Digital, which was supposed to ship the product widely by May, has been quoting lead times of at least 30 to 45 days. And analysts said they don't expect the situation to improve for at least another two months.

"In this business, you simply can't afford 90-day delays after generally announcing a product," said John Dunkle, president of Workgroup Strategic Services in Portsmouth, N.H.

"Rightly or wrongly, the notebook folks at Digital are becoming known as the gang that couldn't shoot straight," said Terry Shannon, an analyst at "Shannon Knows DEC," a newsletter in Ashland, Mass.

Digital hits a low note:

PRODUCT: HiNote Ultra II

ANNOUNCED: March 1996

PROBLEM: Chronic short supply

REASONS: Greater than anticipated demand; Digital is not releasing new model until larger screens are introduced

WHEN CORRECTED: In a few weeks, according to Digital; about two months, according to analysts

Digital last week blamed the shortfall on greater than anticipated demand, but it didn't specify how many Ultra IIs it has produced or what the demand for them is.

Some observers, however, blamed the shortage on sloppy forecasting.

"It is only logical to assume that orders will exceed the dribble that they have been making available to the market" since the Ultra II was announced, Dunkle said.

Observers also said the delay could be the result of Digital's upgrading screen sizes from the current 10.4 inches to at least 11.3 inches on all its Ultra II configurations.

This isn't the first time Digital has squandered opportunities in the portable business to fast-moving rivals such as Toshiba America Information Systems, Inc., Compaq Computer Corp. and IBM.

In the fall of 1994, Digital essentially defined the ultraslim notebook space with the HiNote Ultra, a highly modular, feature-rich, ultrathin notebook. Despite popular acclaim, the product quickly faded away when supplies ran out and users lost interest.

"The Ultra is a great little box. It is nice and quick, and it has got plenty of flexibility," said Chuck Roberson, computer applications supervisor at Citgo Petroleum Corp.'s refinery in Corpus Christi, Texas.

For some users, however, features aren't enough. "I don't care about announcements; I don't care about hype. I care about whether I can actually get a hold of the notebooks," said George Staton, information technology manager at Commerce Bank in Mount Laurel, N.J.

Digital's notebook woes come at a time when other leading vendors, such as Compaq and Toshiba, have also been hard-pressed to keep up with demand.

"Demand has gone way up, and it's a challenge to keep up," acknowledged Jeffrey Frederichs, vice president of marketing at Toshiba.

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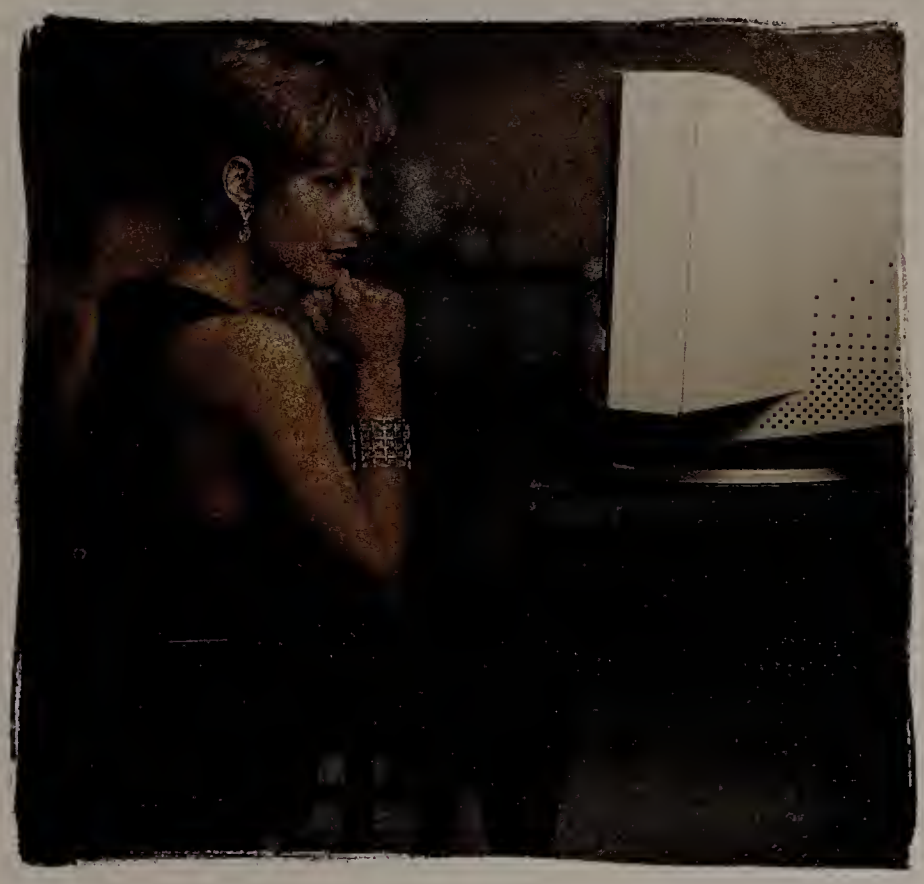

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Lotus weaves Notes into Web

By Tim Ouellette
NEW YORK

Lotus Development Corp. is lining up its Dominoes.

At PC Expo last week, Lotus announced plans to build a series of World Wide Web servers that incorporate pieces of Notes. A Web-based applications design tool also will be available.

The Domino II server line will give Internet users access to Notes features such as security, replication and Notes databases without requiring users to buy in to the full Notes environment and architecture.

Lotus' Domino II server will support:

- HTTP and HTML
- Simple Mail Transport Protocol, Post Office Protocol and Internet Mail Access Protocol Internet E-mail standards
- Lightweight Directory Access Protocol for Internet directory services
- An integrated Lotus Interactive Application Designer for Web-based business applications
- An integrated Mobile Web Information Manager client that leverages mobile features of Notes

Internet servers

The announcement came in the midst of Lotus' beta test of Domino, a Notes server that natively supports Hypertext Transport Protocol and Hypertext Markup Language. Domino lets Web browsers access Notes databases and applications. It will be made part of Notes by September.

Commercial availability of Domino II servers is planned for early next year, which is when Notes 5.0 will hit the streets.

Plan of attack

The Domino II strategy is considered one way Lotus can break out parts of Notes to use on the Internet. That is intended to combat the perception that Notes and Web technology are incompatible.

For example, the first Domino II server expected to go into trial late this year will be built entirely on Internet-only standards for transport, electronic mail, directories and security (see chart). The only Notes presence will be a Notes-based object store.

"Lotus has to Internet-enable Notes even more, whether or not there is demand for these types of servers right now," said Steve Weissman, president of Kinetic Information in Waltham, Mass.

But Domino II won't preclude IBM, Lotus' parent company, from negotiating with other vendors, such as Netscape Communications Corp., to license pieces of Notes for use on the Internet.

Users who tested the current version of Domino said they like how fast Lotus is moving to improve its Internet development efforts.

Web page developer Millennium Productions in Cambridge, Mass., turned to Domino to improve the Web page management services it provides for companies. V. A. Shiva, president of the company, said Domino II would help users conduct better back-end commerce processing based more on the Internet than on Notes.

"We would consider Domino II servers in the future," said William Sheley, vice president of transaction processing services at Bank One Financial Card Services Corp. in Columbus, Ohio, "Right now, Domino opens up the Internet as a realistic distribution center for us."

Network Rx

CONTINUED FROM PAGE 1

tools directly to vital applications.

Once implemented, the ARM API should help an IS department monitor how long it takes to fetch information on an account or enter a customer order, for example.

"With this approach, I can save a tremendous amount of time and trouble by measuring response time myself instead of dealing solely with a user's perception," said Andy Spencer, capacity planning manager at Paychex, Inc. in Rochester, N.Y.

Common theme

Many proprietary methods measure response time for applications, but there is no common way to do it, said Tim Wilson, an analyst at Decisys, Inc., a network consultancy in Sterling, Va.

"HP and Tivoli are trying to get everyone to agree on a way to count the time between the beginning and end of a transaction, like agreeing to rate runners with a stopwatch," Wilson said. "They're smart to start with a function that's consistently required and easily understood."

The ARM API has great potential to benefit users in the long term — but only when their homegrown, customized and off-the-shelf applications contain this instrumentation, cautioned Waverly Deutsch, an analyst at Forrester Research, Inc.

"The whole management industry is in flux, with multiple standards under way," Deutsch said. The success of this API depends on the strength of HP and Tivoli and acceptance by rival vendors, she said.

The software developer's kit is available. HP and Tivoli promised to adapt their transaction tracking software within two months.

Several major vendors last week endorsed the ARM API. They include Boole & Babbage, Inc., Candle Corp., NCR Corp., Netscape Communications Corp., SAS Institute, Inc., Sun Microsystems, Inc., Sybase, Inc., Texas Instruments, Inc. and Unify Corp.

In-house developers can download the tool kit for implementing these application response measurement hooks from two sources: www.hp.com/go/arm and www.tivoli.com.

Users who have tried other ways to track performance said they welcome attempts to deliver a method they could implement and expect from vendors of applications and management tools.

Although it is a good starting point, the measurement approach requires careful implementation because it takes time and resources and could yield information overload, warned Ron Welf, senior technical leader in the network performance and capacity planning group at Charles Schwab & Co. in San Francisco.

"You must think carefully about how many points you track and how to make sense of all the data you collect," he said.

Users offered more client gateways to Notes

By Tim Ouellette
and Sharon Gaudin
NEW YORK

Lotus Development Corp. is beefing up and breaking down the Notes client at the same time. The game plan is to use the application development features of Notes to grab more users, then let those users choose whether to stick with Notes clients.

Specifically, Lotus is giving developers free links via extensions to Notes' Lotuscript language (see chart) from various enterprise systems back to Notes.

Coupled with new World Wide Web browser access to Notes servers (see related story above), a wider range of users can access Notes services, even if they don't use the Notes client.

Lotus officials last week told attendees here at PC Expo that it will add strong functionality to the Notes client via Lotus Components, which ships in August, and direct client access to the Web through Notes 4.5, which is due in September.

More than meets the eye

With the recent moves to open up Notes, IBM and Lotus "are positioning [Notes] as more than just a client in interoffice collaborative computing," said Sam Albert, president of Sam Albert Associates in Scarsdale, N.Y.

Notes development

"This gives users the option not to see the Notes client at all," said Alex Neihaus, a senior marketing manager at Lotus.

Among the reasons to remain with the Notes client are Lotus Components, objects that let Notes users create and edit a spreadsheet or data query inside Notes. Such tasks would normally require that the user launch a separate application.

Even so, Mike Welles, general manager of Lotus' Components group, said, "It is pretty clear to us that additional containers for the components are key for users."

For example, Lotus Components beta tester Marvin Castillo, a senior engineer at Emerging Technologies, Inc. in Denver, said the only drawback he found was that the Components run in a 32-bit environment, which is limiting to the many 16-bit users out there.

Additional Lotus Components clients considered by Lotus include ActiveX-compatible products such as Lotus SmartSuite and Web browsers.

Set the client free

A slew of Lotus initiatives link Notes to the enterprise system and, in some cases, make the Notes client optional:

- **ODBC Driver Release 2** — Lets users query and update Notes data from any ODBC-compliant database
- **Lotuscript Extension tool kit** — Lets developers create custom functionality to the Notes client and server
- **MQSeries Link for Notes** — Seamlessly integrates Notes and transaction processes managed by IBM's MQSeries middleware at the programming level
- **Oracle (Lotuscript extension)** — Notes servers or clients can natively read and write to Oracle databases
- **Notes 4.5 server support** — For Post Office Protocol-3 E-mail clients

But Lotus confirmed that the Notes client is here to stay.

"While we want to be open, we will compete furiously for market share at the client level," said Jeffrey Papows, senior vice president at Lotus. But Papows stressed that Lotus wouldn't reduce the price of the Notes client any further than the current $50 to $69 price range — depending on volume.

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Has It Changed Your Life Yet?

ATM zealots keep faith

By Kim Girard

Once heralded as the fair-haired child of networking, ATM has suddenly turned into a pariah of sorts.

Sluggish sales and a snail-paced standards body have inspired some pundits to declare Asynchronous Transfer Mode (ATM) nearly dead, kicked aside while frame relay and Ethernet surge ahead.

Given the recent talk of ATM's demise, it is understandable that companies might start questioning their decision to adopt the technology. But for many ATM converts, the risks are well worth it.

"ATM bashing hasn't gotten me down," said Chuck Rush, global network architect at McDonald's Corp. in Oak Brook, Ill. "I think there has been no loss of commitment to ATM. The technology is rooted very deep." For Rush, ATM alternatives are a short-term Band-Aid, whereas ATM guarantees a long-term payback.

"[ATM] is the only game in town at the high end," said ATM user Rick Stevens, director of the math and computer science division at Argonne National Lab in Argonne, Ill. No other networking option provides ATM's flexible quality of service, moves data at a rate of 155M bit/sec. and offers low latency for interactive applications that mix voice, video and data, he said.

Roosevelt Giles, a technology integrator at Information Management Systems, Inc. in Atlanta, said that to assure ATM success, ATM standards need to be established quicker, and prices need to drop.

"I don't think ATM is dead," he said. "It's wounded, yes indeed, but it's not dead."

Giles said his Fortune 500 and 1,000 clients are moving toward the technology quietly. And he said bleak ATM user statistics aren't always accurate. "It is a weapon, and people don't want other companies to know what they're doing," he said.

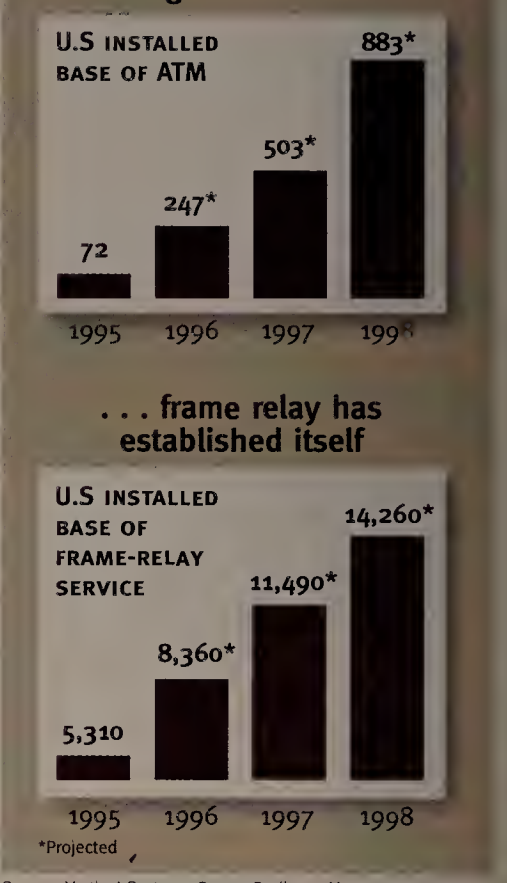
William Horst, communications manager at the General Services Administration, said he is disappointed with vendors that seem to be backpedaling on ATM.

"We got a lot of hype and a lot of fanfare,... [but] now the vendors are saying, 'What about gigabit Ethernet?' Well, that just ticked me off," he said.

Howard Hecht, president of Coalescence, a strategic consultancy in Herndon, Va., said ATM was rushed to market and is suffering as a result. But many ATM adopters are sticking with it, he said.

"If you're a pioneer, you expect to suffer egregious weather conditions," he said. "If they chose ATM because their needs weren't met by other technologies, they've made the right choice."

ATM abasement



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IBM looks to move OS/390 to client/server

Users cast skeptical eye on big iron revamp

By Michael Goldberg
WASHINGTON

IBM's bid to advance the System/390 into client/server spaces by making it cozy up to networking and Unix applications gives the machines a new raison d'etre, longtime users said.

But members of the mainframe crowd who gathered here at the recent Guide International user conference said they still need some persuading before they will equate "big iron" with "open server."

"IBM has needed to make the MVS [operating system] get along with other platforms for a long time," said Matthew Stitt, systems programmer at Oklahoma Farmers Union Mutual Insurance Co. in Oklahoma City. "But whether it's Unix support or whatever, a lot of people still won't take IBM seriously in this area" because they have an outmoded "mainframe mind-set."

User concerns addressed

John Young, an analyst at The Clipper Group, Inc. in Wellesley, Mass., said IBM in the past year has worked on the following two mainframe software fronts to answer customer concerns and guard against erosion in the System/390 ranks:

- With the introduction of the Open Edition Version 5.2.2 of MVS, IBM included about 90% of the standard Unix application programming interfaces (API).
- With the unveiling this year of the OS/390, IBM sought to cut maintenance costs by bundling functions that were formerly sold separately into a suite of 30 programs and the MVS operating system. Depending on a user site's mix of applications and functions, this could reduce the need to install and test programs, Young said.

For some longtime mainframe shops — many of which also use Unix and/or Windows NT servers in a distributed computing setup — IBM's moves are welcome. But more must be done, they said.

The Montgomery County Public School District data center in Rockville, Md., uses several client/server applications with an Oracle Corp. database system. Robert Ingram, system programmer for the district, said officials there are trying to decide between using Digital Equipment Corp. AlphaServers and figuring out a way to use the district's mainframe.

"We want to be able to run a Unix application verbatim" on the System/390, Ingram said. He added that the latest operating system release doesn't guarantee that yet.

IBM officials said they are seeking "full Unix branding" for the OS/390 Release 2, due in September. That means the operating system and software suite will be certified as having all the latest Unix APIs.

"It was a refreshing change from [a user's] standpoint for IBM to recognize the importance of having these kinds of applications ported to the System/390," said Laszlo Kolozsvary, Guide International's president and director of the global energy group at Niagara Mohawk Power Corp. "This way, [mainframes] are taking the competition head-on."

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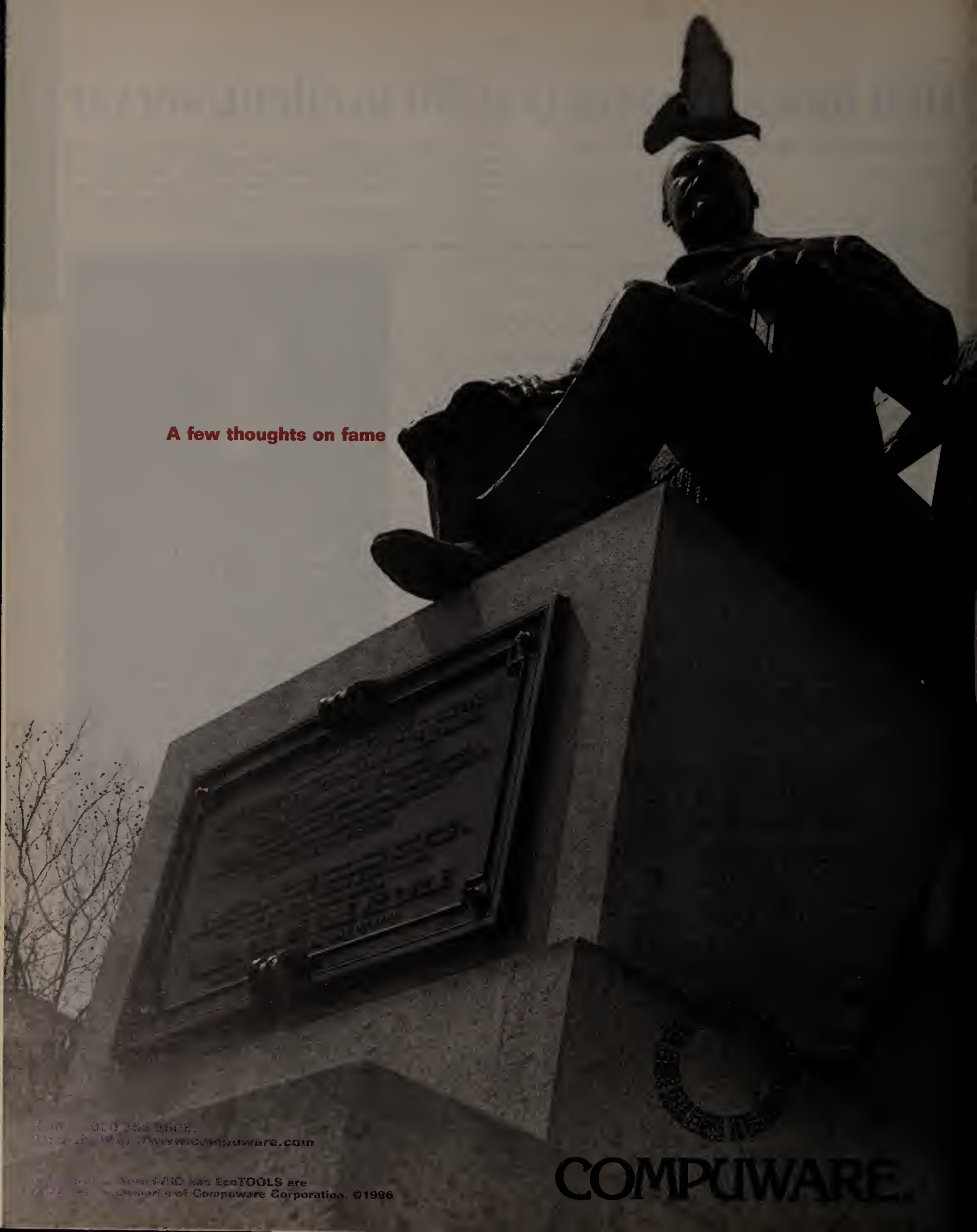
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- Pay month-to-month to ensure that you won't eat a fat bill if the company goes under.
- Don't choose an ISP that offers free service. Small companies that give away their service to high-profile clients can't guarantee that they'll attract paying customers.

Buyer beware of underfunded ISPs

By Justin Hibbard

Companies that rely on small Internet service providers (ISP) may be putting critical operations into the hands of outfits that are one invoice away from bankruptcy.

Internet service providers

For example, IntelliNet, Inc., a start-up ISP in Salt Lake City, was shuttered without warning on June 7. That left hundreds of clients — including the Salt Lake Area Chamber of Commerce, the Salt Lake Olympic Organizing Committee and the Utah Information Technologies Association — without Internet access or a World Wide Web presence.

Glenn Fleischman, former administrator of the Internet Marketing Discussion list server, said members of his mailing list have reported similar incidents in Florida and California, markets where a high concentration of ISPs compete for customers. About 30 local ISPs offer services in Utah — far more than the market will bear.

Fewer companies

A nationwide shakeout of ISPs is inevitable, said Brent Barton, sales assistant and webmaster at KXRK-FM in Salt Lake City. "I think a lot of the small companies will go under, and some of the big ones will survive," he said. "A lot of people will go with the big national companies like Netcom because they're established."

Barton speaks from experience. His radio station used IntelliNet as its electronic-mail host and suffered when the ISP folded. "We were hurt pretty bad for a couple of days." Staff members couldn't retrieve messages, and people who sent messages to the station received no acknowledgment. Barton said the station didn't lose revenue because of the shutdown, but employees' productivity dipped.

The shutdown also hampered operations at the Salt Lake Convention & Visitors Bureau, which used IntelliNet for Internet access and to host its Web site. The Internet had already generated three leads and one convention booking for the bureau, said Jeri Cartwright, the bureau's vice president of communications. Though she couldn't confirm that her organization lost any money, Cartwright said the loss of credibility was more damaging. "We lost ground with clients and with [the bureau's] management," she said.

Customers were unaware of problems brewing at IntelliNet. "The management was living off the deep pockets of an investor rather than living on the profits of the company," said Kevin McBride, the lawyer who oversaw the sale of IntelliNet. "There were a bunch of payables that were coming due, and [the investor] had to choose to pay them or get out."

Ultimately, IntelliNet sold most of its assets and its 1,200-member customer list to Vyzynz, Inc., another ISP in Salt Lake City, for an undisclosed sum.

Other users could face incidents similar to the IntelliNet debacle. Most large companies select large access providers but may outsource their Web sites to small hosting firms.

Few national providers offer hosting services and access, so "big companies that outsource their Web sites are outsourcing them to fairly small companies," said Harry Fenik, an analyst at Zona Research, Inc. in Redwood City, Calif.

Playing catch-up

'net must wait while HR strolls to client/server

By Thomas Hoffman
ORLANDO, FLA.

Vendors were busy pitching Internet-based products, but attendees seemed too preoccupied with the transition from mainframe to client/server-based architectures to notice.

That was the scene at the recent International Association for Human Resource Information Management Conference and Exposition. The exposition drew an estimated 2,000 people.

"We're looking into intranet-based job postings and self-service applications, since there's a lot of interest from our employees," said Catherine Pope, a vice president at NationsBank, NA in Charlotte, N.C. But those projects will have to take a back seat while the bank seeks out a client/server human resource information system to manage data regarding its 70,000 employees.

"Banks traditionally move slower to new technology," Pope observed.

So do human resource departments. Half of the accounting and human resource departments in the U.S. are only just starting to move to client/server computing, said Jeff Comport, research director for administrative applications at Gartner Group, Inc. in Stamford, Conn.

Ford Motor's Michael J. Method *says communication with users was poor but is being fixed through site visits*

Human resource departments "don't get a lot of money, and HR people generally aren't the most technologically advanced," said Tim Ramos, president of Ramos & Associates, a systems integrator in San Ramon, Calif.

Sluggish response

Perhaps that helps explain why National City Corp. is having such a tough time with its year-old PeopleSoft, Inc. system.

The Cleveland bank installed the client/server-based human resource information system last year on two NCR Corp. 3550 servers running Oracle Corp.'s relational database software. Ever since, the bank has suffered from slow response times that range from three to 12 minutes, said Nicholas R. Yukasz, a business consultant for the $51 billion bank.

"We've tried larger buffers [and] new network interface cards, but nothing seems to help," Yukasz said.

Ford Motor Co. has been installing PeopleSoft human resource software in its U.S., U.K. and Australian offices since last year to help it manage more than 100,000 salaried employees as part of a re-engineering initiative. The biggest problem Ford's human resource IS staff has run into hasn't been the technology, but poor communication.

"We communicated to key HR people, but we haven't done enough communicating with management and other users," said Michael J. Method, human resource IS management liaison for the automaker in Dearborn, Mich. To help resolve the problem, Ford's human resource IS people are visiting end users at their offices.

HR IS departments with Internet-based applications — such as self-service benefits systems — face their own set of challenges, such as finding ways to protect employee information and boost Internet response times.

Outsourcing boosts personnel support

Driven by a recent acquisition, Corestates Financial Corp. has outsourced its human resource, payroll and benefits activities in what may be the most comprehensive arrangement of its kind.

Executives at Corestates in Philadelphia won't disclose the financial terms of the deal, but analysts put the contract at $1 million or more.

Under the three-year deal, Genesys Outsourcing Services in Methuen, Mass., has taken over Corestates' mainframe-based human resources systems and hired its 23 payroll and human resource IS employees.

Consultant Robert Kirkpatrick III *says outsourcing will improve benefits access for Meridian Bank employees*

The move will let the $44 billion bank improve personnel support to the 7,000 employees at Meridian Bank in Reading, Pa., according to Robert Kirkpatrick III, former senior vice president of human resources at Corestates and now a consultant at the bank. Corestates bought Meridian in April.

Genesys recently extended open benefits enrollment to former Meridian employees through a Talx Corp. integrated voice-response, self-service system. — *Thomas Hoffman*

You know where

you're going.

Computer Industry

Desktop mapping world is redrawn

By April Jacobs

The map is changing in the geographic information systems (GIS) world.

Environmental Systems Research Institute, Inc. (ESRI) in Redlands, Calif., recently bought a rival desktop mapping software package, Atlas GIS, from Claritas, Inc. in Arlington, Va.

Geographic information systems

Actually, the software pulled in for a mere pit stop at Claritas, which got Atlas GIS in May when it acquired Strategic Mapping, Inc. in Santa Clara, Calif. ESRI announced the acquisition late last month and sent a letter to Atlas users two weeks later.

Atlas GIS and ESRI's ArcView desktop mapping packages are similar, although Atlas was geared toward sales and marketing professionals, and ESRI's software has more analytical tools.

ESRI will honor all Atlas GIS support contracts, but it also gives Atlas users incentives to switch to its ArcView. The incentives include a discount on ArcView training and seminars, and free translators from the Atlas format to the ESRI format.

"We have an upgrade offer so they can move to ArcView, but they don't have to," said Linda Hecht, marketing manager at ESRI.

Hecht said ESRI expects to support about 50,000 Atlas users besides its customer base of about 100,000 ESRI product users.

James Rapinac, an analyst at Daratech, Inc. in Cambridge, Mass., said the acquisition gives ESRI "access to a totally brand-new group of users and customers who are using GIS." ESRI also bought the Atlas software developer's kit.

Kathey Hale, a principal analyst at Dataquest in San Jose, Calif., said the market couldn't support Strategic Mapping and rival MapInfo Corp., the companies that pioneered desktop mapping.

"[Strategic Mapping] just didn't have the results," Hale said, "whereas ESRI is a big GIS company with software that can trickle down to the desktop."

Meanwhile, MapInfo in Troy, N.Y., is aggressively pursuing Atlas users by offering an upgrade to its MapInfo Professional product for $295, $1,000 less than the regular price. The upgrade includes AG Link, a translator that lets users make the switch.

Charis Ng, a research associate at the Social Research Office at Queens College in New York, said users at her office were happy about ESRI's purchase.

"We like the fact that Atlas has been bought by ESRI because we were kind of upset that it was changing hands over and over again," she said. "So far, whenever we talk to [people at ESRI], they respond very quickly and efficiently."

Atlas GIS finds direction

SUPPORT:

Available through Environmental Systems Research Institute (ESRI). Users can call ESRI's technical support line at (909) 793-3774 from 6 a.m. to 6 p.m. PST.

UPGRADE OPTIONS:

ESRI will offer Atlas GIS users Version 3.0.3 upgrade, combined with AtlasApp Plus Pak as a single product. ESRI will continue to sell Atlas GIS for Windows for $795 and Atlas customization tools for $495.

MAKING THE SWITCH:

Atlas GIS users may upgrade to ArcView 3.0 for $249, or $449 with maintenance. The regular price without maintenance is $1,195.

An Alpha bet

DEC seeks high volumes via licensing

By Jaikumar Vijayan

Digital Equipment Corp. has signed on another supplier of Alpha chips and products — this time Samsung Electronics Corp. in South Korea. But it is unclear whether the advent of Alpha machines from Samsung will help boost interest in the chips.

Digital is looking for partners to produce less-expensive, high-volume Alpha chips aimed at the desktop market, said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass.

Digital is currently positioning the 64-bit Alpha as a high-end workstation and server chip.

Search for support

Industrywide market acceptance has been a problem for the Alpha, analysts said.

"Most people view the Alpha chip as an internal Digital product, and it has been very difficult for them to get past that image," said Tony Massimini, an analyst at Semico Research Corp. in Phoenix.

The pact with Samsung, Digital's second licensing of Alpha, is supposed to help address that problem.

But a similar second-source agreement with Mitsubishi Electric Corp. in Japan that was executed in March 1993 has so far failed to generate any kind of market interest.

A jointly developed chip between the two companies — a low-cost Alpha called the PCA56 — is expected early next year and could result in low-cost, Alpha-based PCs, observers said.

Those would join systems from Samsung. Under the agreement signed last week, Samsung will develop and use Digital's 64-bit Alpha chips in a broad range of computer, communications and embedded products.

Samsung is one of the world's largest manufacturers of semiconductor memory and a major stakeholder in PC maker AST Research, Inc. in Irvine, Calif.

Observers predicted that Samsung will use the AST connection to introduce a series of lowcost, Alpha-based PCs, workstations and servers designed to compete against Intel Corp.'s Pentium Pro systems. Those products may be out by the middle of next year, observers said.

Digital and Samsung have made similar alliances in the past with unimpressive results

VENDOR	PARTNER	PRIMARY GOAL	PRESENT STATUS
Digital	Mitsubishi	Second source for Alpha chips, more awareness and distribution	14 engineers working on a low-cost Alpha chip for PCs
Samsung	HP	Entry into the PA-RISC systems market	Failed to take off. Samsung admits it was a mistake.

"If you can get performance equal to or better than Intel at comparable prices, all of a sudden the Alpha starts looking pretty good" in the PC space, said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass.

But the amount of Windows NT software that runs natively on Alpha platforms will have to increase substantially to generate widespread user interest, observers said.

DRAM producers cut back

By Bob Francis

A flooded memory market followed by a runoff of price cuts has led major dynamic RAM chip manufacturers to cut production flow in recent weeks.

For corporate buyers, the drop in memory price has led to a series of price cuts from PC suppliers. Such cuts in the past have followed microprocessor price cuts by Intel Corp.

Toshiba Corp. and Fujitsu Ltd. in Japan last week lowered production for 4M- and 16M-byte DRAMs. The companies cited a declining market for the low-end chips and excess capacity on the high end. Their announcements followed similar ones by Mitsubishi Electric Corp. in Japan and Samsung Electronics Co. in South Korea. Micron Technology, Inc. in Boise, Idaho, has delayed construction of a memory chip plant.

Key reasons

Still, there are conflicting signals about the reasons behind the production cutbacks.

One key factor is the move toward larger memory configurations on PCs and servers. Consumers and corporate buyers are moving quickly to establish 16M bytes as a minimum memory configuration, effectively orphaning 4M-byte DRAM.

The average PC carried 8M bytes of memory as recently as last year. But Dataquest in San Jose, Calif., estimated that most new systems will ship with 16M bytes by year's end.

On the corporate side, PC buyers are sporting 16M bytes and more because of a shift to Windows 95 or Windows NT, each of which is considered a memory hog. Meanwhile, overcapacity in the industry has driven down prices.

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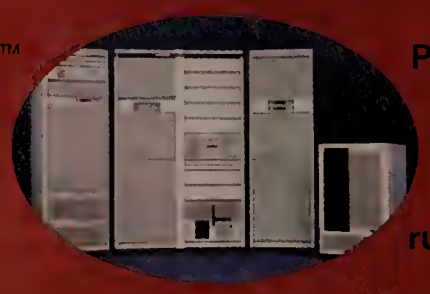

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Editorial

Japan's PC puzzle

Nearly 15 years after IBM introduced the PC, the Japanese wave has finally hit.

Last week, consumer electronics' big kahuna, Sony Corp., weighed in with its entry. And what differentiates the Japanese electronics giant's first U.S. PC?

It's purple.

That's right. The unique feature of the new Sony desktops is the color. Other than that, the units are pretty much like other PCs with good graphics and nice speakers.

Sony isn't the only new Japanese competitor in the U.S. Hitachi introduced some notebooks a few months ago, and Fujitsu made its entry last week. But it'll be a surprise if any of the newcomers achieves much success. In fact, it's baffling why Japanese computer makers — other than Toshiba and NEC, which have been here for years — see this as an opportune moment to enter the U.S. market. PC prices have fallen faster in the past nine months than in the previous 18 months, and the competition continues to pound profit margins. The market is mature, and corporate customers like doing business with suppliers they know. Any gains by a new entrant come only after a bitter battle.

Japanese competitors have tossed a strikingly unimaginative line of products into this piranha pool.

Hitachi's notebook is different mainly because it has an integrated network port. Japanese market leader NEC is now taking the easy route and outsourcing the whole U.S. business to Packard Bell. Sony is betting on the color purple.

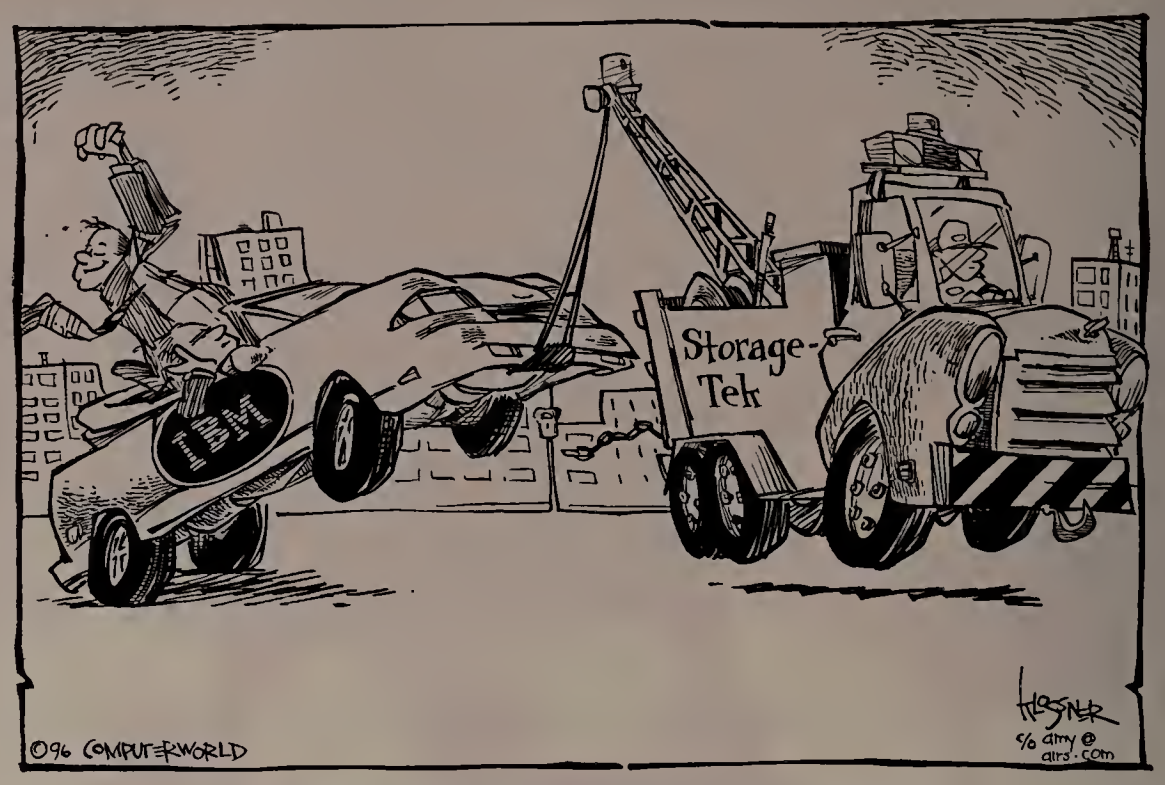
Even the most successful Japanese companies won't find that their domestic experience counts for much here. A single PC standard is only now taking hold in Japan after years in which incompatibility, high prices, low volume and customer lock-in defined the market.

That's the antithesis of the U.S. scene. Meager past runs in the U.S. by Matsushita, Canon and Panasonic raise the question of how committed Japanese vendors are to the market. Do you want to cast your lot with a supplier that may just be dipping its toe in the water?

Buyers will benefit from lower prices sparked by new competition, and that's good. But this crop of newcomers won't shake up the market in a big way.

It's strange how the Japanese PC assault, which U.S. vendors dreaded for so long, has materialized as a gift box full of me-too products.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin



Letters to the editor

No Notes platform is king

Your recent lead story about IBM putting Windows development on an equal footing with OS/2 ["IBM opens Windows," CW, June 3] contains a surprising quote from a Forrester Research pundit who says Notes' "lead platform is NT."

Since when is Windows NT the dominant platform running Lotus Notes? Notes has only been available for NT for a year or so, and frankly, I would be surprised if the installed base of servers comes anywhere near the number of OS/2-based Notes servers.

Please get your facts straight before you allow incorrect information such as this to be published.

Mike Friedman
San Francisco

Editor's note: We asked Lotus about this, and a spokesman declined to break out the percentage of Notes seats on one platform or another. The official position is that no single platform has a significant lead over another, and while OS/2 was indeed the main option for users in the past, NT is a popular choice today.

NC hype is crazy — Hey, I'll take one!

Thank you for your editorial, "PC Jr. II" [CW, May 27]. The media hype about this piece of crap, the Network Computer (NC), is driving me crazy.

The NC is one lame step up from a dumb terminal. If people want a cheap connection to the Internet, they can buy a cheap 386 or 486 computer that has 8M bytes of RAM and a 540M-byte hard drive, floppy drive, 14-in. color monitor, quad-speed CD-ROM, 16-bit sound card and a 14.4K bit/sec. modem for about $1,000.

When I first got on the Internet, more than 10 years ago, I was using a Commodore 64 at a whole 2,400 bit/sec. I had a blast. Sure it was just text, but that's all I really wanted. I used that computer all through college. It's now extinct like the PC Jr. and soon-to-be Apple and NC.

Buff Harding Jr.
San Francisco

The answer to who will buy the so-called $500 Internet box: A lot of us will buy more than one.

Instead of a $2,000 PC purchase for one employee to work at the office, a company can provide a computer for work and home for two employees. A school, for the same dollar amount, can serve four students instead of one.

Agreed, another standard for the sole sake of defeating Microsoft is not productive. The main increase in functionality is the added value of access to resources via the Internet, which with a $500 entry ticket will become more widely used and hence more valuable for us all. As corporate data becomes browsable, perhaps the time has come where less is more.

Emily R. Myers
Decision Design Research, Inc.
Chadds Ford, Pa.

It is cost, not price, that counts

In your article about Ascend and others offering firewall software add-ons for their routers ["Users snubbing router firewalls," CW, June 10], you say "the add-on software approach is cheaper than stand-alone firewalls on workstations." Then you state that adding a $500 software option to a $1,295 router would be "tough to swallow at small sites."

As a [user at a] small site, I can buy a $500 software add-on or a $2,000 workstation and install another $1,000 worth of firewall capability. I hope you can guess which I think I would rather "swallow." With a very small staff (two) and a complex network to manage, I prefer to reduce complexity by limiting the number of separate boxes I have to learn about and manage. I have to consider total cost, not just purchase price.

I applaud a vendor who makes an offering that makes sense to the smaller end of the customer spectrum. I have one point of contact with the outside world, and if that box can also protect my network, I say, hurray!

Nora Miller
Information systems manager
Northwest Power Planning Council
Portland, Ore.
nmiller@nwppc.org

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

David Strom

Digging for gold in your Web server logs

New software can spot trends in the visitor traffic at your Web site.

Most of us would jump at the chance to have a simple, low-cost method of developing new customer leads and further cementing our relationship with existing customers. Here's good news: All it takes is a careful look through your World Wide Web server access logs to find these buried treasures.

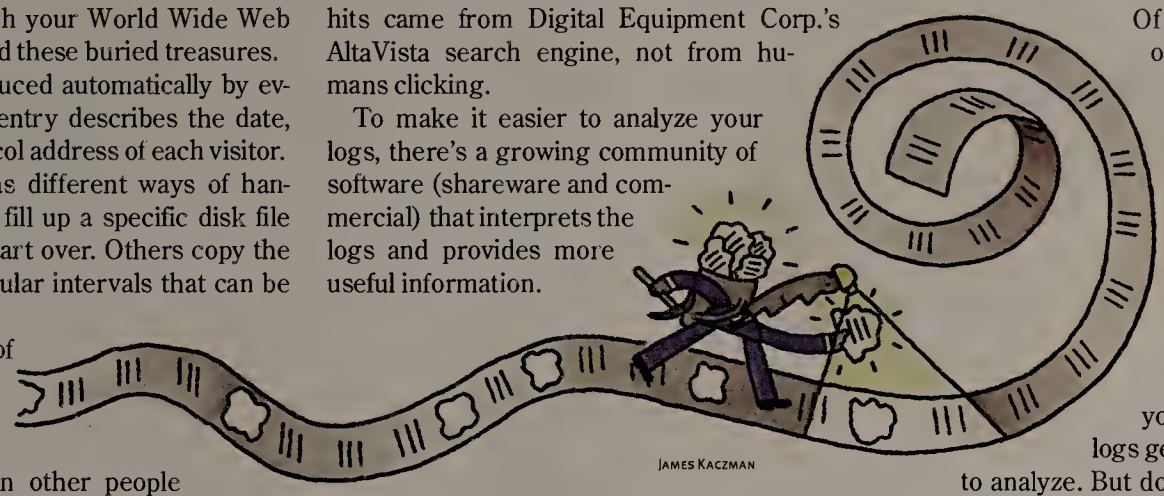
Access logs are produced automatically by every Web server. Each entry describes the date, time and Internet Protocol address of each visitor.

Each Web server has different ways of handling these logs. Some fill up a specific disk file and then erase it and start over. Others copy the log to an archive at regular intervals that can be set by the webmaster.

I find all sorts of things in my logs — when I take the time to read them. For example, I find out when other people copy my work to their local hard drives. I'm flattered to have my work preserved for posterity, but as an author, this activity brings up all sorts of copyright issues. I also find out when people have put hyperlinks to my work on their Web servers — which helps in seeing how my own web of contacts is growing.

Access logs don't provide the whole truth about who's visiting your Web server. If your visitors are behind a proxy server, they aren't recorded. And search robots that scour the Web looking for pages to catalog will inflate your visitor numbers. For example, users from the domain digital.com were the second most frequent visitors to my Web site last month. But most of these hits came from Digital Equipment Corp.'s AltaVista search engine, not from humans clicking.

To make it easier to analyze your logs, there's a growing community of software (shareware and commercial) that interprets the logs and provides more useful information.



JAMES KACZMAN

For example, toy maker Hasbro, Inc.'s international unit used traffic-analysis software on its "Action Man" site, which promotes Europe's version of G.I. Joe. The analysis of visitor-browsing habits showed that 40% didn't make it past the front door, according to a report in *Web Week*. So Hasbro's London webmaster redesigned the Web pages with more information about the site's contents and inspired 50% more visitors to stick around, the story said.

The Yahoo search engine (www.yahoo.com) has a nice list of these traffic-analysis software tools; search for "access log." But remember: These products don't necessarily address the problems of undercounting and overcounting.

Of course, reading your logs is one thing. Acting on them is another. You need to make improvements to your Web site so that visitors can find information more easily. At the same time, put your most popular pages in plain sight so that others can find them, too.

One problem is that as your site gets popular, the logs get bigger and take more time to analyze. But don't let another month go by before taking at least a cursory look at your logs. Not looking at them is like not answering the phone or not helping customers that come to your store. The longer you ignore your logs, the more potential business you'll miss.

Strom, a consultant in Port Washington, N.Y., runs two Web sites: Web Informant (www.strom.com), which covers Internet-based marketing issues; and WebCompare (www.webcompare.com), which provides in-depth information about Web server and browser features.

Patricia B. Seybold

Customer care systems: The next generation

You'll need an integrated system with real-time data and a 360-degree view.

Recently I attended a meeting of information systems professionals in the telecommunications industry. What a tough job.

The industry is undergoing intense competition from upstarts who aren't encumbered by legacy systems and legacy policies. The systems are large, complex and hard to change. The interfaces between the order-taking systems and the operational systems are hard-coded and based on 20-year-old industry specifications.

Meanwhile, the business executives are tearing out their hair because they need much tighter relationships with their customers — the customers whose data is locked in to these hard-coded applications — before those customers are stolen away by the competition. The business executives also need to be able to design and launch new products and services in weeks, not months.

Discuss next-generation customer-service systems with columnist Patricia Seybold this week by visiting the @Computerworld Forum (www.computerworld.com).

Does this sound familiar? Banking, energy, utility, pharmaceutical and other industries are facing similar scenarios.

The simple answer, you might say, is to build a data warehouse to pull all the customer-related information in to one logical place. Then, create a SWAT team with rapid application development (RAD) tools to prototype, design and roll out applications for new products and services.

Wrong! Eventually, you'll probably need to do both of those things, but they won't solve the main problem or let you get the well-deserved rest and recreation you crave.

What you need is a new platform for integrated customer interactions. Replace your outmoded order-taking systems with state-of-the-art customer-interaction applications. Customers should be able to sign up for your products and services by calling your toll-free telephone number (as they probably do now) or by following the prompts on a voice-response system. Or, they should be able to jump on the Internet to request information, order services, call up their bill and pay it, review their profile of services and change some of them.

Furthermore, you want every employee — from the salespeople and technicians in the field to the vice president of marketing — to have access to an integrated picture of the firm's interactions with your customers. The applications they use to do their jobs should be integrated with the customer-interaction platform.

This is quite different from a conventional data warehouse. A data warehouse consolidates information stored in legacy applications, refines it and puts it in understandable form for analysis. What I'm talking about here is a dynamic suite of applications with real-time information. These are the systems you use to serve customers, to cement and strengthen customer loyalty and to discern patterns so that you can create popular new programs and services.

The system should provide a 360-degree view of customers and their interactions with your firm. The integrated suite of applications will handle everything from billing to field sales, from help desk support to enabling customers to help themselves to information and services.

You can start with one of the many off-the-shelf packages for integrated customer care and tailor it to your business. Or, you can build it yourself, knocking off one application at a time.

Yes, you'll want to have a data warehouse full of relevant information about your customer accounts. Yes, you'll want a RAD SWAT team to develop and deploy applications for new product rollouts. But do all of this in the context of an integrated customer-interaction platform. That's how you become a hero and get to enjoy that well-deserved vacation.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is pseybold@psgroup.com.

Why you'll be happy that people are surfing the net on company time.

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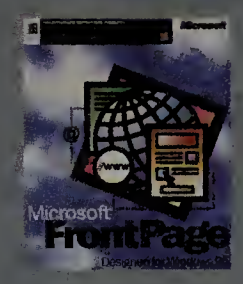
It's not the Internet. It's your new intranet, where your users can share information better than ever before. All over the world, businesses like yours are starting to build intranets to improve information flow within their organizations, with customers and with partners. Intranets combine the Internet's easy navigation with the power and productivity of personal computing. So users not only have the ability to find relevant company information more quickly and easily, they can also employ their desktop applications to create, analyze and collaborate in new ways.

With the Microsoft® Office for Windows® 95 family of applications, you can get the most out of your intranet. Because users can share information on your intranet using the Microsoft Office applications they're using today. For instance, documents created in any Office application can automatically be saved as HTML* for others to view in any web browser. Or users can post the same documents in their native file formats to facilitate more flexible, in-depth analysis and collaboration. Add the new Microsoft FrontPage™ web authoring and management tool, and users can easily create and update their own interactive, content-rich sites by simply clicking, dragging, and dropping.



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Canon plans digital multifunction machine, 41

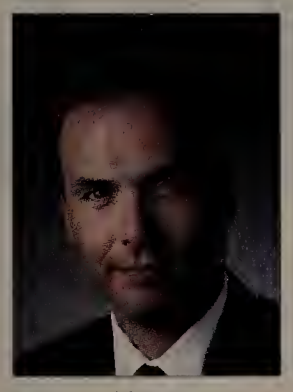
Servers & PCs

Shipping service keeps users truckin'

By Craig Stedman

Fill 'er up.

That's the idea behind a new online freight shipping service that uses Unix servers and a relational database to make it possible for trucks to carry more cargo as they barrel down the road.



NTE President Greg Rocque: *Surveys show that more than 30% of an average truck's carrying capacity is unused*

The National Transportation Exchange (NTE) is trying to play electronic matchmaker between shipping companies with partial truckloads and freight carriers that have spare capacity. Based in Downers Grove, Ill., the exchange automates what has typically been a labor-intensive process of multiple phone calls and price haggling.

Real-time information

Modeling itself after a stock exchange, the NTE collects shipment orders in its database, computes a price for each one and then matches them to truck routes provided by carriers (see chart). The database is updated instantly as new shipments are tendered, and carriers can get a list of loads that meet their route plans in less than 30 seconds, NTE officials said.

"Before, [arranging shipments] was day after day of phone calls and faxes going back and forth between us and carriers. Now it all happens electronically, and the system does the groundwork for us," said Vince Piper, traffic manager at Thrall Car Manufacturing Co. in Chicago Heights, Ill.

Thrall Car, a maker of railroad freight cars, uses the NTE system to find carriers for about 30% of the inbound shipments that go from suppliers to its plants in Illinois and Georgia. That amounts to 20 to 30 shipments per week, and Piper said the reduced phone time frees him to do more shipment planning and other long-term projects that were placed on the back burner before.

Beyond the convenience, the NTE also holds out the potential of tasty financial carrots for both shippers and carriers.

The ability to place a small load in a partially filled truck lets shippers avoid paying the full cost of hiring a carrier. For example, Piper said he has been able to save 5% to 40% off what he would have had to pay to get a trucking company to carry only his load.

Shipping service, *page 41*

Big rig matchmaker

Here's how the National Transportation Exchange's (NTE) system arranges matches between shippers and trucking carriers:

1. **Shipping companies enter information on available loads.**
2. **NTE system automatically calculates the cost of each shipment.**
3. **Shippers that accept the cost figure have their loads added to NTE's database.**
4. **A carrier inputs truck routes and available load capacity.**
5. **NTE system lines up to five loads that the carrier could handle.**
6. **If a match is accepted, the system notifies both parties and handles all billing and credit functions.**

IBM's AS/400 gets a facelift for the Internet as

Venerable becomes virtual

By Michael Goldberg

With this month's release of a new version of the AS/400 operating system, IBM is moving some users toward the Web and corporate intranets.

But don't fire up the AS/400 as an electronic commerce engine just yet.

The Internet-friendly OS/400 for the new RISC systems based on PowerPC processors won't be ready until late this year. Users who can't wait, however, can acquire AS/400 software from I/Net, Inc. in Kalamazoo, Mich., for between $2,000 and $5,000. And IBM's AS/400 division is still working on plans to support Sun Microsystems, Inc.'s Java programming language, data encryption and Internet firewalls, all due next year (see chart).

The good news, according to users and observers, is that IBM has put the AS/400 on the Internet on-ramp, with plans to advance [CW, June 10]. And if the computer family runs a step behind some of the leading-edge vendors, that suits the AS/400 community just fine.

Pleased customers

At Pacific Brokerage Services, Inc., a Los Angeles firm that early this year built a World Wide Web trading server using an AS/400, CEO Steven Wallace said he is thrilled IBM is investing in Internet features. The firm has used I/Net software to give customers access to market information and make trades over the Web through its AS/400 server.

IBM may "take a little longer" to bring out the latest Internet features for the AS/400, Wallace said. But he is confident that support will come. "The machine itself is the key. And with that machine, we have a tremendous capability to grow, and we will stick with it," he said.

Dave Andrews, managing partner at D. H. Andrews Group, Inc., a consultancy in Cheshire, Conn., has published a report on the AS/400 and the Internet. He said IBM's plans mean users will be able to conduct commercial transactions over the Internet. But they can do it with the relative ease of use that has been the AS/400's strength.

IBM's support for Java programming on the AS/400 will be important for sophisticated users and application developers bringing new capabilities to market, Andrews said. Also important is IBM's plan to embed Notes in a future version of OS/400. This will make rapid application development easier for users.

While users have hailed the AS/400 Internet directions, the results are too late for some.

Jim Belter, director of technical support at Werner Enterprises, Inc. in Omaha, said his transportation company plans to base its Internet project on an RS/6000 Unix server from IBM. One reason is that he wants to keep his AS/400-based business data isolated from the public Internet. Another reason is that all the features he wants are "available today [on Unix] as opposed to the AS/400," he said.

Over the next year, IBM is expected to add these kinds of Internet-related features to the AS/400:

Domain Name Service: Translates virtual Internet addresses into physical server locations.

Point-to-Point Protocol: Communications protocol that allows dial-up Internet access.

Firewalls: Protect server-based data from intruders.

Data encryption: Transmits information securely through Secure Electronics Transaction Standard

Java support: Builds applications using Sun's Java programming language.

Improved Notes support: For developing Internet applications based on Notes.

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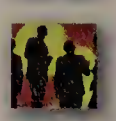

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COMPUTERWORLD

Everything you need to know.

Volume 1 • Number 1 • June 24, 1996

COMPUTERWORLD intranets

THE MANAGER'S GUIDE TO WHAT'S REALLY IMPORTANT

PROJECTS

Trans Ocean piggybacks an intranet on its Web home page. Result: Higher worker productivity, more reliable global access for order entry and inventory. Page 4

ADVICE

Start supplementing – not replacing – your systems with intranet technology now, top industry consultants say. Standardize on TCP/IP, HTML to build a solid foundation. Page 4

EXPLAINER

So what is an intranet, anyway? A network that uses Internet technologies – browsers, Web servers, search engines – inside company firewalls. Page 6

ANALYSIS

Net gain, net pain

Payoffs can be big. But there are no free lunches.

BY JOSEPH MAGLITTA

It sounds too good to be true: a free browser, a Unix or NT server, a firewall or two, and boom — you've got cheap E-mail, reduced printing and delivery costs, maybe even a new enterprise platform.

Continues on *page 2*

ANALYSIS

Net gain, net pain

Continued from page 1

Hard numbers are scarce. But early adopters of intranets report high paybacks at low cost. "It's a no-brainer," says Chuck Oakes, general manager of systems architecture and integration at Diamond Shamrock, Inc. in San Antonio.

The consensus of many users and consultants: Get going fast on a pilot or expand current efforts.

Reported payoffs include cheaper expense-report processing and software distribution, easy links to outside information and a solid foundation for electronic commerce outside company walls.

Big challenges loom, however. Among them: bandwidth crunch, security, scalability, manageability, vendor battles, internal politics and linking.

"There are no free lunches," notes Ken Horner, head of electronic commerce at Deloitte & Touche in New York.

Knowing the major intranet gains and pains can help you avoid the hype hangover that followed client/server.

gain

Low barrier to entry.
Initial efforts are cheap. Most projects use existing staff, funds, TCP/IP networks, routers. Few firms do detailed cost/benefit analyses.

Example: The Port of Los Angeles spent less than $100,000 to create an intranet for 18 field offices worldwide. "Pretty much all [of] that was new Pentiums, Windows 95 and printers," says CIO Stan Johnson. "It was dirt cheap." One new sale will justify the project, he says. Estimated payback time: three months.

pain

Hidden costs.
Consultants warn of a dark, slippery slope. Support for multiple browsers, hardware upgrades, application development, process redesign, firewalls, systems management, legacy integration and complexity could quadruple intranet budget estimates, says International Data Corp. (IDC) Vice President John Gantz.

Other potential dollar drains: content development and maintenance, installation or expansion of T1 lines, management of "applet libraries," rising product costs. Mainframe-centric organizations that lack a solid TCP/IP network will pay most dearly.

High demand also may boost costs.

"Users will start to say, 'Why can't we use this for a cheaper, better alternative for fill-in-the-blanks?' " says David Yockelson, vice president of the advanced information management service at Meta Group, Inc. in Westport Conn. "That will cause a lot of troubles."

And it may boost costs for IS services (with or without added staff).

gain

Cheaper training costs.
"Just-in-time instruction" via World Wide Web servers can slash classroom time.

Example: AT&T Corp. halved classroom time for 4,500 customer service reps to 25 days using intranet-based instruction, says Gene Speicher, customer care division general manager.

pain

Market madness.
Chest-thumping, confusion and self-interested propagandizing mark the industry's mad scramble to cash in on intranets.

A tidal wave of products due this summer will show whether vendors can

make it easier and cheaper to create more useful intranets; and whether big guns such as Microsoft, Novell and IBM will deliver on promises. Gaping holes in directory and authentication services, security and management tools must get plugged.

It's too early to tell if outsourcing intranet development and maintenance makes more sense.

INTRANETS: COMPANIES' 1996 PRIORITIES	
Publish manuals and procedures	53%
Groupware to develop product and services	51%
Group document review	47%
Publish catalogs, parts lists	47%
Publish HR and job info	36%
E-mail	34%

Source: Computerworld *survey of 103 IS executives at companies with more than 500 employees. Multiple responses allowed.*

gain

Cheaper printing.

Replacing documentation, newsletters and forms is the clearest early payoff. Many firms report slashed printing, mailing, distribution costs.

Example: Tyson Foods saved $10 per employee manual by posting the document on its 5,000-user intranet.

Low-hanging fruit for electronic publishing include telephone directories, data sheets, material safety sheets, surveys and human resources materials such as 401K information, travel policies and job postings (see chart above).

pain

Measuring payback.

Many big benefits (better communication, greater access to information) elude conventional return-on-investment analysis. That's what buried videotext, notes David Whitten, vice president of networks and electronic workplaces at Gartner Group, Inc. in Stamford, Conn. Many companies lack accurate "before" costs, making it tougher to show benefits. New studies due this summer from Gartner, Meta Group and IDC may shed new light.

The big challenge: learning new ways to assess value. Tip: Consider intranets part of overhead expenses such as sales and administration, advises consultant Paul Strassmann.

Example 1: Sandia National Laboratories CIO Mike Eaton brought intranets to 6,000 users as part of a huge infrastructure overhaul. "I resisted ROI as long as I could to keep things going," he says.

Example 2: Fedex Corp. asked user departments to describe the present cost of sharing information. The project cleared the corporate ROI hurdle with just four applications, says project leader Gary Stedman. These were help desk call logs, corporate newsletters, benefit plan changes, external customer queries.

Others advise asking executives and users to describe the value of a better decision, faster customer service and new opportunities, as well as the cost of *not* investing.

@ ONLINE

- Conference: "What's the best way to demonstrate the value of intranets?" Tips and sources.
- QuickPoll: "Does your company require cost/benefit analysis of intranets?"
- User advice: Diamond Shamrock
- An expanded version of this article.

http://www.computerworld.com/intranets

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EDITOR
Joseph Maglitta

MANAGING EDITORS
Joyce Chutchian-Ferranti
Anne McCrory
Pat Erickson

ART DIRECTOR
Janell Genovese

EDITOR, COMPUTERWORLD SPECIAL PROJECTS
Bruce Rayner

Phone: (800) 343-6474
E-mail: joe_maglitta@cw.com
Fax: (508) 875-8931
Online version:
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Behind the Firewall

Your users know it. Thanks to glossy business mags, your top management knows it. And your staff knows it.

Like it or not, intranets are here.

One of the worst things about a technology craze is the hopeless info-glut it produces. Every vendor in the world is drooling at graphs that show sales

of intranet software and servers zooming heavenward between now and 1998. Ditto for researchers, consultants and publishers.

Each month, Computerworld Intranets will boil down key issues for managers. We'll point to best resources, both print and online. Check our Web page (www.computerworld.com) for interactive, ongoing idea sharing.

Yours in making intranets safety nets, not snares,

Joseph Maglitta
Editor

ADVICE

Those who ignore the intranet will be quietly put to rest. Through 1998, complement and augment — don't replace — current enterprise systems with Internet-based technologies. Bill Nicklin, research associate, Gartner Group, Inc.

For certain applications, Web technology is a lot cheaper than any other tools. Will it be absolutely the cheapest across the board? No. You can't paint the whole picture one color. Ken Horner, partner, Deloitte & Touche

Don't get too lost in the battle between browser-based "thin client" (Netscape) and application-based "fat client" (Microsoft). Most companies will use both. Meanwhile, standardize on HTML, HTTP, TCP/IP, standard servers (NT, Unix), Java, SQL. Michael Bauer, director of technology planning services, Electronic Data Systems Corp.

Smart IT groups recognize the potential. Either they wake up or they get outsourced. There are IT groups that embrace the Internet and want to make the tools and environment available. David Yockelson, vice president, advanced information management service, Meta Group, Inc.

The most visible return [on intranets] is reducing the cost of managing end-user systems and software. For example, rather than having to set up the individual systems of 10,000 users, you make the change at the Web server and users can download on the fly. Rick Villars, director of network software, International Data Corp.

[Intranets] are not for everybody. Some companies need them, and some companies are so fragile and vulnerable to the competition that to introduce a change element is not a good idea. Doug Shinsato, director of technology planning services, A.T. Kearney

PROJECTS

Trans Ocean Ltd.

San Bruno, Calif.
One of the world's largest maritime container leasing companies.
Jonathan Fornaci, CIO:

What they're doing
Trans Ocean's intranet is a superset of the corporate home page (http://www.tolcontainers.com). Visitors and employees see the same screens, but staff can access additional fields. "We're creating one master system," explains Fornaci.

Benefits
Users have real-time, 24-hour worldwide access to order-entry and inventory applications. Access is via wide-area network or local point-of-presence provider. Intranet cuts the number of user screens from 10 to one. "We've won a lot of new, high-level users who used to pick up the phone to ask somebody to run a report for them."

Replaces
Terminal-based application on leased-line proprietary WAN. "The old system was slow and difficult to use. We had people out in the field — in South America and parts of Asia and China — who weren't able to connect and get data for days at a time."

Cost/Time
$100,000. Three months for development, two weeks for final testing. Piggybacking intranet on World Wide Web page development cut project timetable/budget "in half."

Components
Web server consists of Netscape Server on Digital AlphaServer 1000. A 50G-byte Oracle database runs on a DEC Alpha 8200 system.

Staffing
Five outsiders, internal project manager. "We ran into lots of people who had done Web pages and some who had database experience. But few had the full nine yards. Competition for them is intense."

Biggest technical challenge
Security. Firewall uses three low-end Alpha systems from Digital. Two security routines: 128-byte (domestic), 40-byte (international).

Biggest people challenge
Showing support to internal IS staff after decision to use contractors in initial phase. Solution: "Sending everyone in IS to intranet classes at the local university. I no longer have to use consultants." After the rollout, the project manager was hired away at double his old salary.

Future
Full HR system on intranet.

— Brian McWilliams, Durham, N.H.
(http://www.mediapool.com/offtherecord)

ONLINE

- Q&A with CIO Fornaci
- RealAudio clip: staffing
- Trans Ocean's project plan
- Link to Trans Ocean's home page

http://www.computerworld.com/intranets

JONATHAN FORNACI, Trans Ocean CIO: *Competition for project staffers is "intense."*

PHOTOGRAPH BY WILLIAM MCLEOD

Netscape's James Barksdale on Informix.

James Barksdale
President and CEO, Netscape Communications

"Netscape partners with Informix because of its unique Web database technology.

Together, we provide customers an ideal solution for next-generation, high-performance, content-rich Web applications."

Jeff Hudson
VP of Business Development, Informix

"The Web requires a database that combines high performance with the ability to manage a wide range of new datatypes—image, video, text, geo-spatial, and more. Informix and Netscape enable customers to quickly develop powerful, innovative Web applications that meet any business requirement."

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Drill Down

SERVICE

Can't get enough of intranet/Internet info? A new service will send you top news and analysis every day via E-mail. Annual cost: $895 individual; $2,495 for five people; $8,950, enterprise. Zona Research, Inc. (415) 568-5700; http://www.zonaresearch.com; E-mail: info@zonaresearch.com.

CONFERENCES

Utilizing Intranets or Internal Webs To Maximize Information Sharing in Your Organization — New York, July 18-19. (212) 366-3212. Boring title, good focus.

REPORTS

"When You Decide to Buy: Analyzing and Selecting Web Servers." Detailed product comparisons of 33 servers for various platforms. Mier Communications (http://www.mier.com). (609) 275-7311.

PICK OF THE CLICKS

Site hosted by British site provider Lochnet features intranet links, products, white papers galore: http://www.lochnet.com/client/smart/intranet.htm

EXPLAINER

A universal definition is still emerging. But in general, intranet refers to the use of Internet-derived technology — such as browsers, World Wide Web servers and search engines — inside company firewalls to boost organizational productivity. It may or may not be connected with the external Internet.

Intranets are perhaps best thought of as additional networks overlaid on existing IP (Internet Protocol) networks. They employ Unix and Windows NT servers and encompass LANs (see chart below). Among other things, intranet users can send electronic mail and access new and legacy databases and applications.

In theory, users get common access to a few large servers via a standard platform-independent interface — a Web browser.

Intranets promise several payoffs: universal information distribution through a standard client (the browser); guaranteed access through a common network protocol (IP) and access methods; and the replacement of the complexity of existing systems with a few standard technologies: Common Gateway Interface (CGI), Hypertext Transport Protocol (HTTP) and Hypertext Markup Language (HTML). (See our online glossary for explanation of these terms.)

In business terms, these capabilities can translate into faster, cheaper information access and distribution; better collaboration via messaging, shared calendars and conferencing; new enterprise applications such as transaction processing, multimedia and decision support. The end goal: faster delivery of products and services, cost savings, new business opportunities.

Intranets shouldn't be confused with virtual private networks, which link organizations using a limited, secure path on the Internet. As intranets mature, many analysts predict, they will displace client/server applications and perhaps even corporate networks and E-mail.

— Charles Babcock, Joseph Maglitta

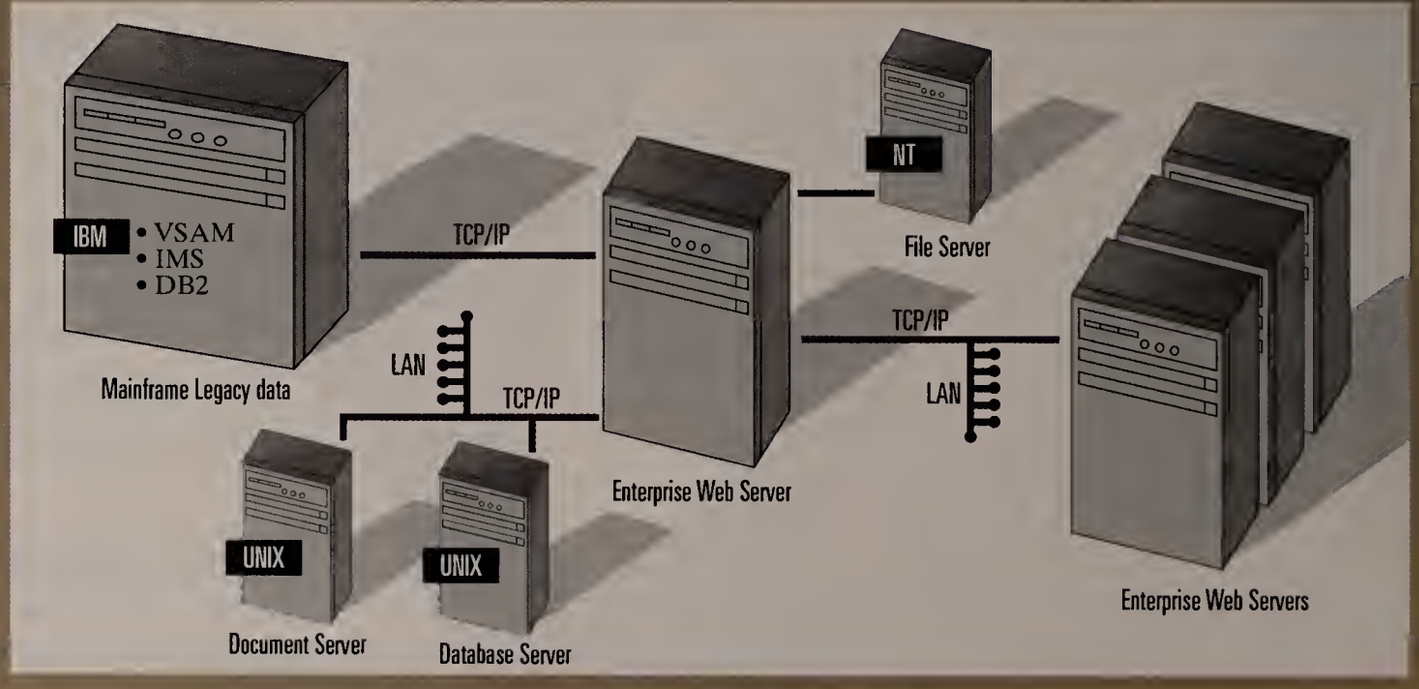
ONLINE

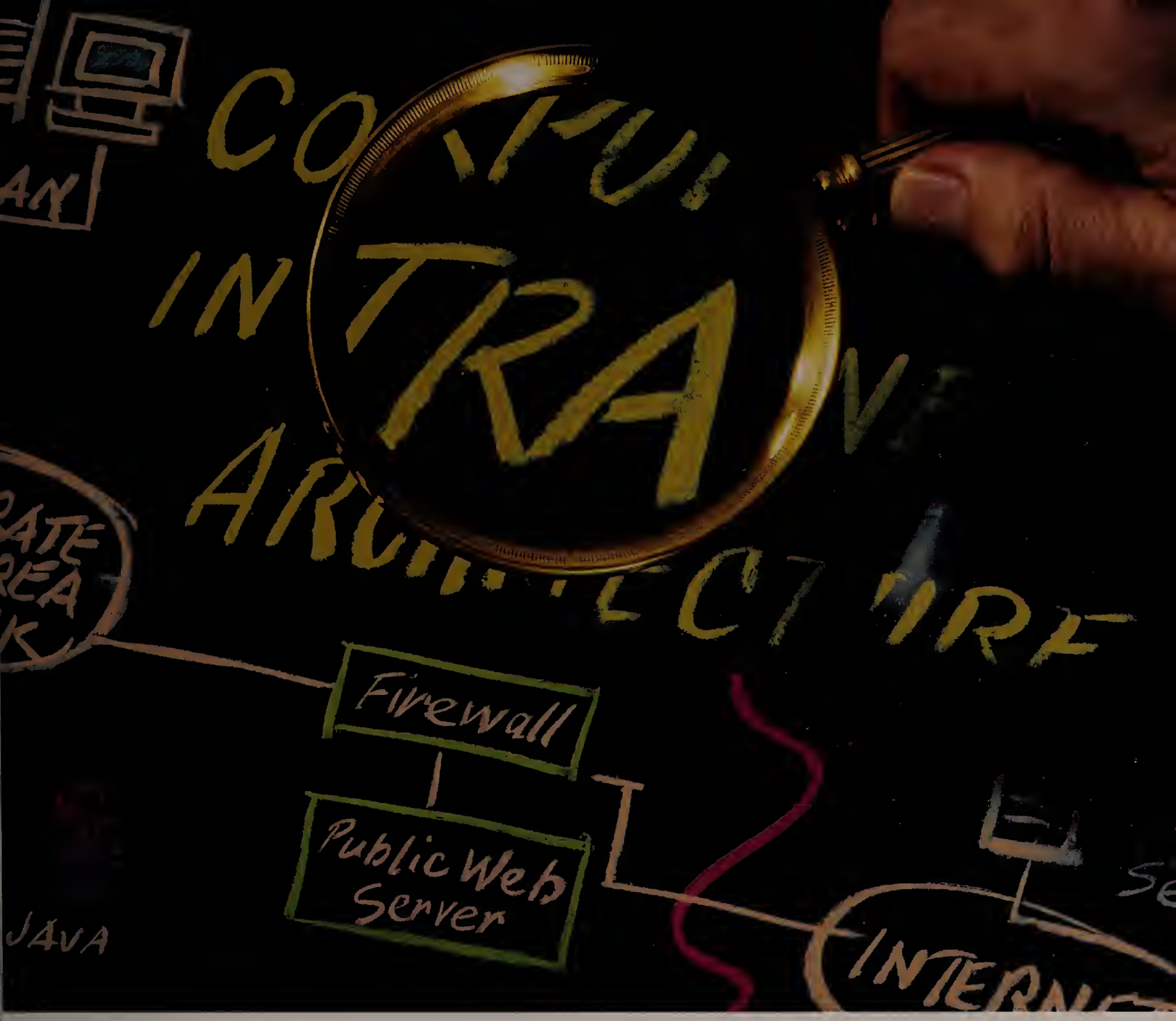
- Glossary of related terms
- Links to other explanatory materials
- Links to technical sites

http://www.computerworld.com/intranets

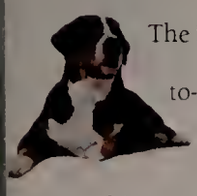
BEHIND THE BROWSER

By serving as an overlay on existing networks, intranets can integrate legacy and new systems





Sun designed the first intranet back when people thought intranet was a typo.



The intranet. Everyone's talking about it, but few are taking advantage of it. Whether you're talking business-to-business, or business-to-consumer, Sun can show you the opportunities associated with the intranet, and then provide you with the products, service and support to help you implement those solutions. Everything from industry-leading, easy-to-use Netra™ servers and key industry partnerships, to the revolutionary Java™ technology, and Solstice™ SunScreen™ and Solstice FireWall-1™ security products. So don't waste time and resources trying to re-create the wheel, call Sun. After all, we're the intranet experts—we helped invent it. To learn more about Sun, contact us at http://www.sun.com or 1-800-786-0785, Ext. 370.

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Trying to find accurate information in the midst of all the intranet hype is a challenge. Relax. You'll feel a lot better when you get the facts from the industry experts. Call for your free Forrester Reports on intranets and Web server software. Both analysts and the trade press agree, if you're building an intranet, you need to consult Netscape.

> *Forrester defines Full Service Intranet as: standardized e-mail, directory, file print, and network management. Netscape gets it. And with SuiteSpot it has begun to deliver on the vision.*
>
> –The Forrester Report
> The Full Service Intranet, March, 1996

And *PC WEEK* said:

> *For corporations planning to use intranet-based technologies for internal use, [Netscape] SuiteSpot is shaping up as a better alternative...*
>
> –*PC WEEK*, May 13, 1996

IS professionals have not only chosen Netscape Navigator for their intranet, they're choosing the full range of Netscape's software solutions. In fact, when Forrester polled professionally managed Web sites, 80% indicated they had chosen Netscape.

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Briefs

Let your 'net do the walking

PC systems integrator **Entex Information Services, Inc.** has announced a partnership with **Connect, Inc.**, an electronic commerce software provider in Mountain View, Calif. The partnership will allow corporate customers to buy PCs over the Internet. According to Entex, in Rye Brook, N.Y., corporations spend between $200 and $400 to process a large PC purchase, and this method will reduce that cost significantly. Entex will implement the service in September on a test basis, with a full rollout scheduled by the end of the year.

IBM wins deal

IBM in Armonk, N.Y., won its biggest contract yet in the securities industry with a deal to deliver more than 3,500 RS/6000 workstations to Deutsche Bank AG. The deal is valued at more than $600 million.

PC, heal thyself

The ability for a PC to "repair itself" took a leap forward when **SystemSoft Corp.** in Cambridge, Mass., **Intel Corp.** in Santa Clara, Calif., and **Digital Equipment Corp.** in Maynard, Mass., introduced a suite of software products that identify, diagnose and resolve common PC usage and configuration problems right at a user's PC. The product, SystemWizard, will be bundled with new PCs, peripherals and software applications beginning later this year.

IBM, Pac Bell tie knot

Pacific Bell in San Francisco and **IBM** have formed a services alliance under which their subsidiaries — Pacific Bell Network Integration and Integrated Systems Solutions Corp. (ISSC) — will jointly market networked desktop computer systems and services. ISSC will handle help desk operations and support services for desktop systems. Pacific Bell Network Integration will deliver networking equipment, network professional services and LAN management. The alliance will focus on California businesses.

Canon's GP200 has all users need plus some

Firm to unveil machine that prints, copies and sends faxes

By April Jacobs

Canon USA says it plans to unveil at Networld/Interop '96 later this year a new digital multifunction machine that prints, copies, sends faxes and scans.

The GP200 will follow other pieces of that strategy announced in May, which included the DR-3020 scanner, the CFX fax products and Netspot management software. Netspot allows users to configure and manage devices regardless of platform. Also announced in May was the CFX-B38OIF — a combination color printer, PC fax, scanner and telephone.

Canon said it will continue to provide a wide range of analog products but wants to give customers the advantages that digital, networked hardware and software can provide.

The GP series of multifunction machines, for example, allow users to combine the functionality of several machines into one, saving them money and time, the vendor said. The added ability to be part of a networked environment also allows users to send and receive documents electronically.

Dennis Amorosano, manager of the networked office systems division at Canon, says the GP200 will be customizable.

In May, as part of its digital and connectivity demonstration, Canon ran its products on Novell, Inc.'s NetWare, Microsoft Corp.'s Windows NT, IBM's AS/400 and Sun Microsystems, Inc.'s Solaris.

Multifunction machines

Company on the move

Cliff Bartha, a senior industry analyst in the document management group at Dataquest in San Jose, Calif., said the digital market is growing.

"The least evolved segment of the market is the small workgroup, and I think as more products like the GP200 enter the market, it will grow. We forecast it to grow from 19,100 [shipments] to 116,000 [shipments] in the year 2000," he said.

Grant June, systems administrator at Credit Counseling Centers of America in Dallas, said he uses Canon's GP55 multifunction unit to handle printing. It also meets June's image editing requirements for brochures and advertisements.

"To open up the whole office to the use of the printer is great," he said. "If we had to purchase printers and other copiers, we would have spent a lot more."

John Logan, vice president of digital imaging systems at Fastprint in Brockton, Mass., said he prints business materials and uses the GP55 to fax originals created in Brockton to other office locations.

"The good thing is that it has a tabloid-size [option], which a lot of office fax machines can't handle," Logan said.

New Products

Sigma Designs, Inc. has announced RealMagic Ultra, an advanced MPEG-1 playback card.

The Fremont, Calif., company said RealMagic Ultra combines high video quality with built-in sound capabilities and optional output to television monitors. It is intended for corporate training, presentations and education applications and was designed to eliminate compatibility problems with high-end graphics cards.

The card supports 16.8 million 24-bit colors and horizontal and vertical interpolation. An optional output option allows direct connection to American or European TV monitors for kiosks or other applications.

Pricing for RealMagic Ultra starts at $399.

▶ *Sigma Designs*
(510) 770-0100
www.sigmadesigns.com

Intergraph Corp. has announced a new generation of three-dimensional graphics workstations, TDZ-310, TDZ-410 and TDZ-610.

The Huntsville, Ala., company said the workstations are based on Pentium Pro processors and Windows NT. They deliver real-time, interactive 3-D graphics and accelerate high-quality rendering. Texture memory is available in 4-, 8-, 16- and 64M-byte modules. The workstations also use trilinear mip-mapping to optimize the realism of textured objects.

The workstations include an Intergraph-developed library of graphics extensions. An optional geometry accelerator was designed to accelerate transformation and off-load graphics processing from the CPU. Each also includes an eight-speed CD-ROM.

Pricing starts at $9,995 for TDZ-310 with a single 200-MHz Pentium Pro processor with 32M bytes of RAM and 1G byte of hard disk space.

▶ *Intergraph*
(205) 730-3000
www.intergraph.com

Hewlett-Packard Co. has unveiled the LaserJet 5 family of workgroup printers.

The Palo Alto, Calif., company said LaserJet 5 printers offer fast graphics printing, improved gray-scaling, a new font-synthesis technology and complete backward compatibility. The printers have 33-MHz Intel Corp. processors and can print 12 pages/min. with 600 dot/in. resolution.

Prices for the LaserJet 5 line of workgroup printers start at $1,299.

▶ *Hewlett-Packard*
(415) 857-1501
www.hp.com

CMS Enhancements, Inc. has announced Interact-4, a PC CD-ROM changer designed to fit in a PC's standard half-height 5¼-in. drive bay.

According to the Anaheim, Calif., company, Interact-4 is a quad-speed, four-disc changer that stores up to 2.6G bytes of information and is compatible with Windows 95 and Windows NT.

Interact-4 supports a full range of CD formats and requires 4M bytes of RAM and 1M byte of hard disk space. Interact-4 costs $299.

▶ *CMS Enhancements*
(714) 517-0915

Product short

Micro Design International, Inc. has announced a new generation of SCSI Express optical jukeboxes with 2.6G-byte magneto-optical drives. Pricing starts at $6,995. Micro Design International, Winter Park, Fla., (407) 677-8333, www.mdi.com.

Service keeps users truckin'

CONTINUED FROM PAGE 39

Observers said the NTE concept may be harder to sell to carriers because they already can charge full truckload rates for partial loads. But Greg Rocque, the NTE's president, said carriers could get more aggregate revenue by charging lower prices for multiple shipments in a truck.

Growing company

The NTE charges member companies a small set-up fee and then takes an unspecified percentage of each transaction. It has about 200 members, a tiny drop in the bucket in the sprawling trucking industry.

Sign them up

The National Private Truck Council, an association that represents 1,100 private fleets, such as corporations with their own trucks, is one large carrier group that is buying in to the NTE approach. It agreed in May to include the matching service as a recommended option for its members.

For private haulers, filling up unused space in their trucks reduces shipping costs and provides added revenue, according to Gene Bergoffen, president of the Alexandria, Va.-based council. NTE "is really real time," he added. "Once you're online, you can see what's available and commit to [carry] something right then and there."

The NTE system is based on Hewlett-Packard Co.'s HP 9000 Unix servers and Oracle Corp.'s database. It runs a combination of Oracle's packaged financial software and custom applications that were written by BALR Corp., a Chicago consulting firm that designed and built the system for the NTE.

The matching service went live last summer and expanded nationwide earlier this year. Users can access it via local CompuServe numbers or Electronic Data Interchange connections. An Internet link is scheduled to be added this summer, Rocque said.

Netscape's Jam

es Barksdale on Informix.

James Barksdale
President and CEO, Netscape Communications

"Netscape partners with Informix because of its unique Web database technology. Together, we provide customers an ideal solution for next-generation, high-performance, content-rich Web applications."

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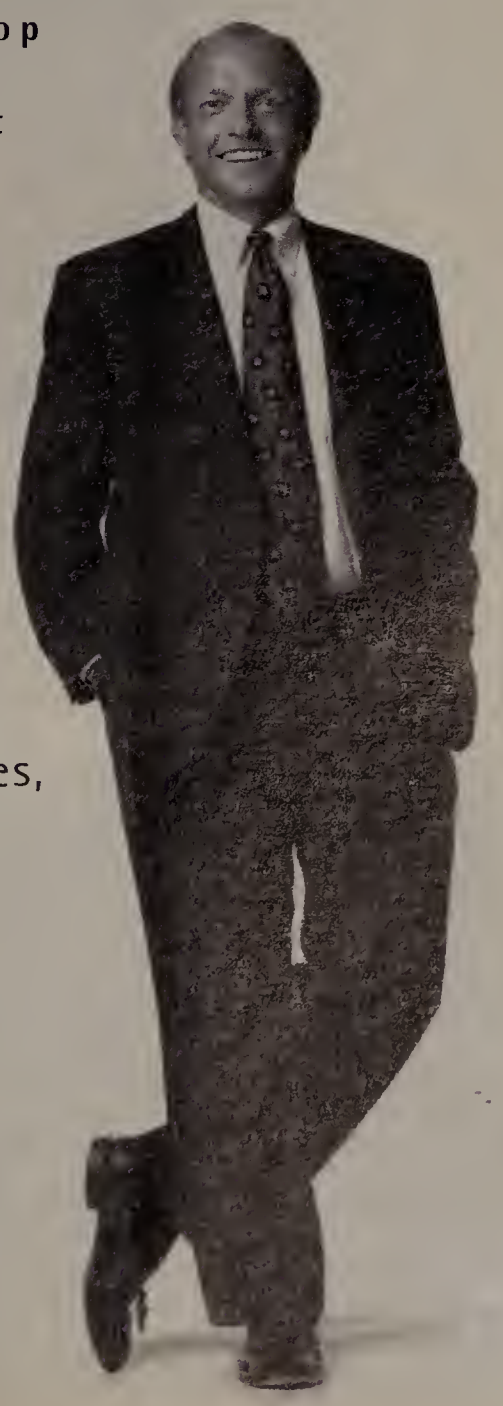
"The Web requires a database that combines high performance with the ability to manage a wide range of new datatypes—image, video, text, geo-spatial, and more. Informix and Netscape enable customers to quickly develop powerful, innovative Web applications that meet any business requirement."



At Informix, we deliver innovative database technology for a growing number of industry leaders worldwide. By teaming with companies who share our vision, we provide our customers with the solutions they need to stay ahead of change, make the most of emerging opportunities, and gain a competitive edge in business.

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Users are waiting impatiently for standardized business objects, 52

Software

Looking for answers

Text-management add-ons can leave users confused

By Dan Richman

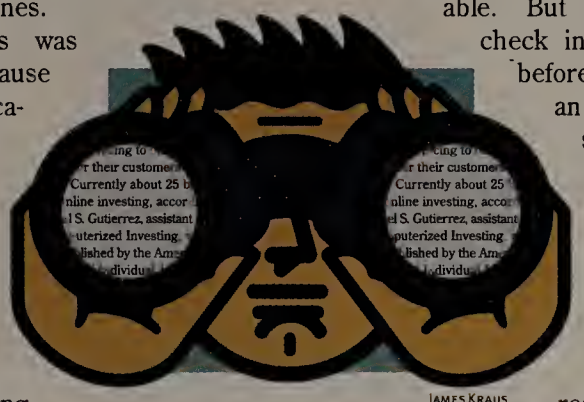
The major vendors of relational database management systems are rushing to let users store and manage text along with more traditional data. But let the buyer beware: The forthcoming text-management options may differ widely in price and features.

And because the competitive stakes are high, the vendors are turning up the fear, uncertainty and doubt factor in a big way for these add-ons.

"Text search is something users should clamor for, but it is damn difficult getting the straight story on these products," said Curt Monash, an editor at "Monash Software Letter," a newsletter in New York. Text management is the first of the nontraditional data types, such as video and audio, that represents the new competitive battleground for RDBMS vendors.

Until recently, RDBMSs let users store and manipulate numbers, dates and phrases of only specified length and content. Longer, less rigidly structured text, such as reports, proposals or memos, had to be stored in files searchable by separate engines.

That process was unwieldy because the same application couldn't access text and other forms of data simultaneously. So integrating text with other kinds of data required moving query results among applications.



JAMES KRAUS

One critical question for users is whether the various vendors' text-management add-ons allow a single SQL query to access both text and other data. Each vendor says that its add-on does and that the others don't.

All the products in this area — except for one — are still in beta testing, so the confusion is perhaps understandable. But users should check into this feature before they choose an add-on, experts said.

Another point of distinction is whether the vendor's text-management add-on can reach text stored in various file types or another vendor's database. A third is whether the add-on can summarize documents, inferring their topic by scanning and indexing their contents.

The version of Sybase, Inc.'s SQL Server 11 that works with Verity, Inc.'s TopicSearch is set to ship early next year. It will include TopicSearch at no extra charge. Informix Software, Inc. will incorporate Verity's technology at no extra charge in the hybrid Informix-Illustra RDBMS promised by year's end.

Oracle Corp.'s ConText, an add-on to Oracle7, is set for release by July 1 and will sell for less than $500 per user. IBM's Text Extender to DB2 is already shipping for AIX and is set to ship next month for OS/2 and Windows NT. It will cost $495.

Full of potential

Beta users said text management has at least the potential to be useful.

Dan Woods, applications editor at Pathfinder, the Web site of Time, Inc. New Media in New York, uses both Verity and Sybase. But using the two together "requires brute force," he said. The forthcoming integration "will streamline our ability to let Internet visitors search through our databases of Time publications with ease, not having to care which field of database the data is in."

Smithsonian's suite search through history

By April Jacobs

Managing the nation's most famous historic information and finding ways to make it readily available is a daunting task, particularly when the information is indexed in everything from card catalogs to electronic databases.

Search engines

That's precisely the job that curators such as the Smithsonian Institution's Jim Wallace face every day.

Search-and-retrieval engines — coupled with multimedia and World Wide Web browsers — make his job easier.

Technical know-how

With that technology combo, Wallace is working to tie databases to text and images in order to make information about exhibits, photos and history available to researchers and the public.

Wallace is the director/curator of the office of printing and photographic services at the Smithsonian.

The Smithsonian is using SRA International, Inc.'s Intermezzo, a multimedia software search suite that was designed to run on intranets.

The Smithsonian's Jim Wallace *says search suites and browsers make his job easier*

The Smithsonian has been using electronic images — in addition to traditional film, which is fragile and needs special storage conditions — for several years. Because the longevity of digital technology is not fully known at this time, it isn't considered a total alternative to hard copy, Wallace said.

To find images, the Smithsonian began putting together a database of what was available in various formats.

"We have a database left over from the video disks we produced, but we also have a database that we're putting together with the photo CDs," Wallace said.

What interested Wallace the most about Intermezzo is that people could do a search against both databases.

"We may have a photo of the ruby slippers in *The Wizard of Oz*, and there is another database that has more information about acquisition records and display records," he said.

Eventually, the Smithsonian hopes the public will be able to access its databases via the Web, Wallace added.

Ask and you shall retrieve

To help catalog its vast trove of the nation's treasures, the Smithsonian is using SRA's Intermezzo search-and-retrieval software. Relatively new to the market, Intermezzo allows a user to submit a single query. Intermezzo then polls the databases to which it is connected and provides one collective answer.

"Prior to Intermezzo, you would have to log in to all of those separately," said Carl Frapaolo, executive vice president at Delphi Consulting Group in Boston. "There's no other vendor's product which will automatically do that for you."

The search-and-retrieval market grew from $370 million in 1994 to $421 million in 1995, a growth rate of 14%.

— April Jacobs

New Products

Kurzweil Applied Intelligence, Inc. has announced VoicePad 1.0 for Windows 95, a voice-enabled word processing application.

According to the Waltham, Mass., company, VoicePad 1.0 lets users integrate voice input with the keyboard and mouse and create text, enter data and control the word processing application by speaking into the PC.

It can create memos, format text, navigate through menus and dialog boxes, change settings, and preview and print documents.

VoicePad 1.0 has a vocabulary of 12,000 spoken words. An additional 500 user-specific words can be added.

VoicePad 1.0 requires a Pentium microprocessor, 5M bytes of dedicated RAM, Windows 95, a 16-bit sound board, 20M bytes of dedicated hard disk space and a high-resolution video adapter. Pricing starts at $50.

▶ *Kurzweil Applied Intelligence*
(617) 893-5151
www.kurz-ai.com

NetSoft has announced BeeHive, a multifunction software package for IBM AS/400 users.

According to the Irvine, Calif., company, BeeHive works with the NetSoft/Router. It is a Windows-to-AS/400 communications package.

It includes a tool that downloads AS/400 database information to the PC, software that lets users post virtual notes and messages to team members, an interactive discussion service, a data-transfer scheduler, a spool-transfer application and a power synchronizer.

BeeHive costs $39.

▶ *NetSoft*
(714) 753-0246
www.netsoft.com

CoStar Corp. recently introduced Address Fixer for Microsoft Corp.'s Word and Office.

According to the Greenwich, Conn., company, the software is a Word add-in that checks any address in Word against a CD-ROM database of U.S. addresses. It corrects misspellings and mistakes and adds the nine-digit ZIP code to all addresses.

Address Fixer for Microsoft Word and Office costs $20. A network version is also available.

▶ *CoStar*
(203) 661-9700
www.costar.com

TechSmith Corp. has introduced SnagIt/32 3.1, a utility for Windows 95 and Windows NT.

According to the East Lansing, Mich., company, SnagIt/32 3.1 lets users dynamically capture, save and print the contents of vertically scrolling windows from thousands of applications.

It can capture long World Wide Web pages, save forms that are longer than the screen and print the contents of an archive file.

It supports graphics interchange format graphic image files, color reduction and JPEG image-quality levels.

SnagIt/32 3.1 is sold in a twin-pack with the 16-bit version of SnagIt for Windows 3.x users. It costs $40. Multiuser licensing is also available. Evaluation copies are available at the company's home page.

▶ *TechSmith*
(517) 333-2100
www.techsmith.com

Timeslips Corp. has introduced Timeslips Deluxe 7.0 for Windows, a time and billing program.

According to the Dallas company, Timeslips Deluxe 7.0 was designed to assist lawyers, accountants and other service professionals who are tracking time and expenses by producing customized billing and management reports. It has updated billing capabilities with large activity and history description fields.

It features a slip list that can be viewed or printed in several ways, including by client or user, recent modifications, date range and time or expense slips only.

Timeslips Deluxe 7.0 is available in a single-user version, a three-user networked version and a remote version. Pricing starts at $300.

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Briefs

Product supports Unix users

Sybase, Inc. has announced Support Plus Lite, which the company says offers non-mission-critical, PC-style support to users in Unix environments. With Support Plus Lite, customers pay $175 per issue, defined as a specific problem or set of related problems. Support Plus Light sites could resolve 17 issues per year for the cost of the next-highest level of support, Support Plus Standard, which costs $3,000. For a year of new releases and enhancements, Support Plus Lite sites will have to pay an additional $295 for eight users.

Tool integrates Windows data

Oberon Software, Inc. in Cambridge, Mass., has rolled out Prospero 1.1, a Windows-based visual development tool that can integrate data from desktop applications, databases, Lotus Notes and the World Wide Web. Prospero lets developers assemble building blocks that represent access to data sources and then visually specify how data will flow among them. The release adds support for Web browsers and servers from Netscape Communications Corp., Microsoft Corp. and O'Reilly and Associates, Inc. Prospero 1.1 costs $695 and is shipping now for Windows 3.1, Windows 95 and Windows NT.

Fax server upgraded

RightFax, Inc. in Tucson, Ariz., has introduced the latest version of its fax server software for Microsoft Corp.'s Windows NT and IBM's OS/2 platforms. RightFax 4.50 also gives users streamlined Novell, Inc. NetWare connections. Other enhancements include integration with telephony applications and faster fax sending and receiving. A single RightFax 4.50 server license for unlimited users costs $1,495 and is available now. The company can be reached at (520) 327-1357.

Groupware for intranets

Ulysses Telemedia Networks, Inc. in Minneapolis late this month will ship the Odyssey software suite, groupware based on intranet technology. The suite includes Odyssey Contact Manager, Odyssey Calendar and Odyssey Reminder, which prepare messages (or recurring messages) for delivery days, weeks, months and even years in advance. The Odyssey suite runs on a corporate intranet server. Prices start at $1,500 for the server software and $150 per user.

Speeding up SAP

Hewlett-Packard Co. has announced an accelerated SAP implementation service that it claims will halve the time and money that many companies now spend to install SAP AG's R/3 enterprise software. The new service — which is aimed at midsize companies that run SAP R/3 on HP computers — compresses the design, configuration and training phases of a traditional SAP implementation into a single four- to six-month period. All tasks are handled simultaneously, rather than sequentially. All contracts are on a fixed-price, fixed-time basis.

Faster OnLine system

Informix Software, Inc. has announced Version 7.2 of its OnLine relational database management system. It includes a parallel-loading feature that one user said provided an eightfold increase in performance. The new version also offers instant replication to multiple sites, 64-bit addressing and online backup and recovery. OnLine 7.2 is available immediately for Unix, and a Windows NT version is promised by Sept. 1. Curt Ollerer, a database administrator at **United Airlines**, said OnLine 7.2 loaded a 20G-byte file in less than three hours, using all 12 processors in the company's HP 9000 T520. Version 7.1 took more than 24 hours to load the file, he said.

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For more help determining the best mix for your company, visit www.microsoft.com/windows/mix2/

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Application Development

Standardized business objects on hold

Some software vendors decide not to wait for standards

By Frank Hayes

Users want business objects that are standardized and available now. Trouble is, they can get only one or the other.

On one hand, Users who build large-scale client/server applications want to be able to buy standardized, interchangeable business-oriented program components. "I want a standard for financial objects, for example, so I don't have to build it myself," said Rich Lemieux, lead architect at Aetna Life and Casualty Co. in Hartford, Conn.

On the other hand, users want business objects *now*. "People have to build it themselves now — we need business objects that companies can buy," said Zev B. Lavon, a consultant at RBS Consulting in Baltimore.

Business objects are to enterprise applications what on-screen widgets such as buttons are to graphical user interfaces (GUI). They are basic, standard pieces from which much of an application can be built. But corporate developers are learning that, for business functions such as customer invoicing and inventory transactions, they can have it standard or they can have it now — but they can't have both.

For example, IBM is developing a library of more than 1,000 server-oriented business objects at laboratories in Minnesota and Germany. The project will create plug-in components that will run on IBM and non-IBM platforms, including mainframes, OS/2, Windows NT and several varieties of Unix, said Steve Carter, manager of application frameworks at IBM's AS/400 Division in Rochester, Minn. IBM has tapped "hundreds" of other software vendors for design input, he added.

The new libraries will be integrated with the GUI libraries that IBM acquired late last year when it absorbed Taligent, Inc., IBM's joint project with Apple Computer, Inc. and Hewlett-Packard Co. The Taligent libraries are designed for the client rather than the server.

But the project, code-named San Francisco, is in the design-review stage and won't deliver products until next year. And standards for how business objects should work, which Object Management Group in Framingham, Mass., is developing, won't be ready until at least next year.

Users want standard components, and they want them now.

IBM and others are working on these, but it's not just the big guys: Tactica Corp. in Portland, Ore., plans to roll out its own server-oriented libraries for Windows NT, OS/2 and Unix in July.

Unwilling to wait

Meanwhile, other vendors are jumping into the breach with business objects that aren't waiting for standards. SAP America, Inc. and SSA, Inc. each said they will break their enterprise systems into libraries that corporate developers can use. It's not exactly what users want, but it may be what they will go with.

"We need the standards, but we really want plug-and-play business components now," said John D. Johnston, a technology planning program manager at Sprint Corp. in Overland Park, Kan., who is looking at SSA's approach. "We'll have to do some of the work, but we really want things we can buy off the shelf."

New Products

TopSpeed Corp. has announced Clarion 2.0 for Windows, Professional Edition, a rapid application development environment for database applications.

According to the Pompano Beach, Fla., company, Clarion 2.0, Professional Edition lets developers create data-driven applications. The latest edition includes object-oriented programming (OOP) enhancements, OLE/OCX support and options that let developers customize the appearance of applications. Clarion lets developers create identical-looking Windows 3.1, Windows 95 or Windows NT applications from a single project file.

The OOP enhancements were designed to let developers use existing procedural code and add object structures and object-oriented code when and where they wish. OLE/OCX support lets developers set object properties and monitor events and call methods.

Pricing for Clarion 2.0 for Windows, Professional Edition starts at $599.

▶ *TopSpeed*
(954) 785-4555
www.topspeed.com

Globetrotter Software, Inc. has announced FlexIm for Java, a development license manager.

According to the Campbell, Calif., company, FlexIm for Java monitors and controls users' compliance with a software product's license terms. Developers can integrate FlexIm for Java into their applications, and it responds based on the user's license rights described in a license file.

FlexIm for Java was designed to let developers distribute applications across the Internet and track licenses so they can limit use to licensed customers.

Pricing for a FlexIm developer license starts at $4,000.

▶ *Globetrotter Software*
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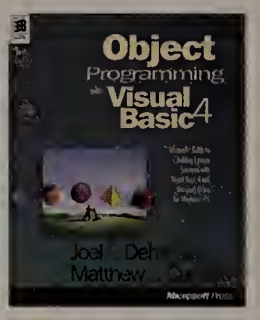
www.globetrotter.com

Book bytes: Visual Basic

Object Programming with Visual Basic 4 by Joel P. Dehlin and Matthew J. Curland; Microsoft Press, Redmond, Wash.; 502 pages; $39.95 with CD-ROM; paperback.

This is intended for programmers or technically oriented end users who want to roll their own objects — using Visual Basic, of course. Although objects can be written for any Visual Basic application, the focus is on Microsoft Corp.'s Office for Windows 95.



There is an overview of Visual Basic, which includes QuickEdit, and there is a chapter about the basics of objects and containers. Then talk turns to Office — using objects with Excel, Word and the rest of the gang.

The CD-ROM includes all the book's sample code for object building. It also includes the Object Navigator, an invention of one of the authors that helps locate specific objects within libraries and helps build code that can be pasted into other code. — *Johanna Ambrosio*

Visual Basic Programming: A Labaratory Approach by Judith L. Gersting; Computer Science Press, an imprint of W. H. Freeman & Co., New York; 510 pages, $44.95 with floppy disk; paperback.

With its learn-as-you-go philosophy (the "laboratory approach" referred to in the title), this book will hearken you back to your school days. At the beginning of each chapter, it tells you what you're going to learn, then teaches it to you and, several times within each chapter, gives you a list of tasks for you to do on your own (the "lab"). To help you relate these discrete tasks to your work, there are also "projects" for you to do on your own; the project files to help you are contained on a 3½-in. floppy disk.

Finally, there are miniquizzes along the way. (Of course, unlike in school, you can cheat on these tests. But you'll still learn Visual Basic — and that is the point, after all.)

It is complete, thorough and easy to follow. Its only flaw is that it teaches Visual Basic 3.0 — with a four-page appendix devoted to 4.0, we hope an updated version of this book is in the works. — *Johanna Ambrosio*

Micrasoft Excel/Visual Basic Reference, Second Edition; Microsoft Press, Redmond, Wash.; 871 pages; $29.95; paperback.

If you're looking for an entry-level, user-friendly guide to writing complex macros and routines for Microsoft Excel using Visual Basic, look somewhere else. On the other hand, if you need a concise alphabetical reference to the commands and functions available through Visual Basic for Excel, read on.

This is Microsoft's official reference for Visual Basic programming for Excel 5.0 and Excel for Windows 95. It includes some programming tips and definitions of individual commands and how they are used, including syntax and sample code. The information in the book is the same as that contained in the Microsoft Excel Visual Basic Help utility but is easier to browse through.

— *Kevin Fogarty*

Learn Visual Basic Now by Michael Halvorson; Microsoft Press, Redmond Wash.; 407 pages; $39.95; paperback.

If you are looking for a guide to Visual Basic programming aimed at readers who are either completely new to programming or new to Visual Basic, this is for you.

The book comes with a practice version of Visual Basic, which can't create executable programs, and sample code.

The guide uses screen shots and step-by-step instructions to demonstrate how to launch Visual Basic and begin writing code, including definitions of even simple terms and practices. The instructions start simple, but later chapters do get into more complex applications, including database access controls, event-driven applications, sharing code among applications and using Microsoft's OLE technology to control Microsoft applications.

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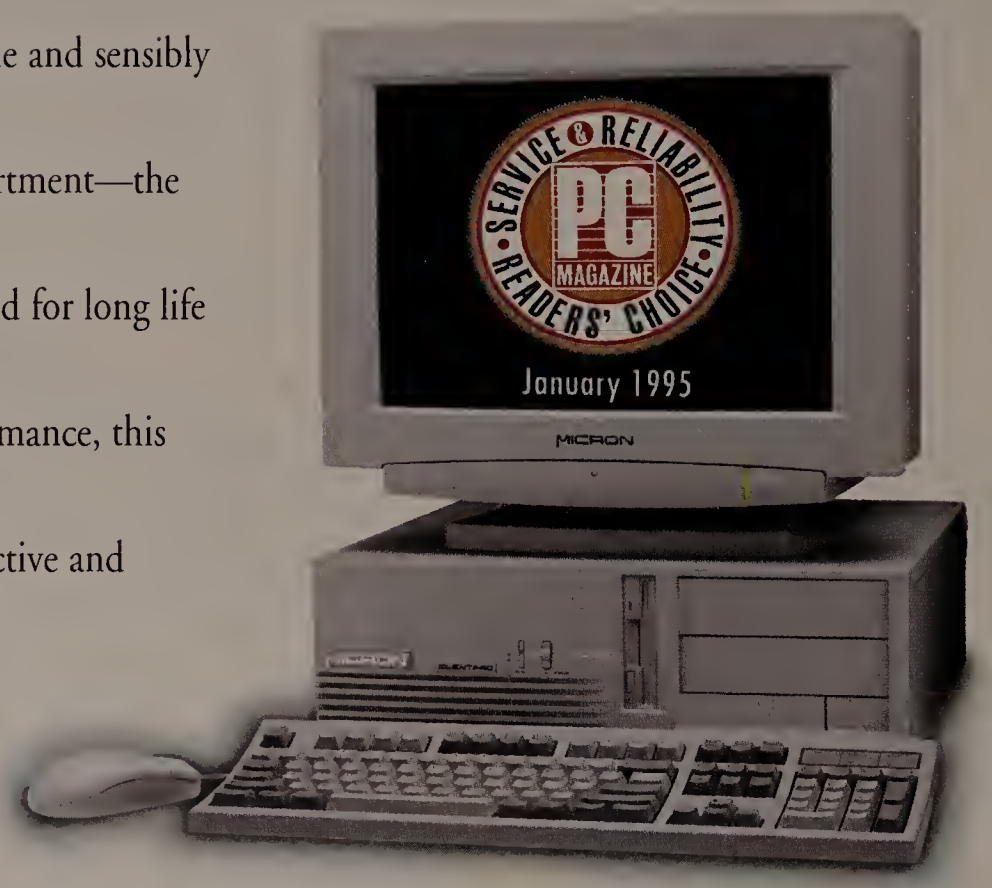

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Switching's Big 3 announce wares at lower prices, 57

The Enterprise Network

ATM starts to make public appearances

Baby Bells tap in to wide-area service

By Kim Girard

Asynchronous Transfer Mode (ATM) continues to creep into the wide area as regional Bell operating companies nationwide dabble in the service.

Bell Atlantic Corp. in Philadelphia this month became the latest regional Bell operating company (RBOC) to announce ATM on the public network.

The tariffed service — offered free of mileage and usage charges — will be rolled out in Philadelphia and Washington in the third quarter and throughout the metropolitan mid-Atlantic region by year's end, according to Bob Deaven, ATM product manager at Bell Atlantic. Pacific Bell and US West, Inc. also offer tariffed ATM.

Ways to go

ATM is used nationwide at 300 to 500 sites. ATM services revenue for this year is projected at $67.5 million — about 1% of the data networking services market.

New opportunities

Bell Atlantic previously offered ATM on a case-by-case basis. But a formal tariff will lock Bell Atlantic into a specific price range for ATM and still allow some room to negotiate.

Alton Brantley, chief information officer at the Medlantic Healthcare Group in Washington, said wide-area ATM will provide the bandwidth the group needs to move medical images and graphs shared among 25 sites, including hospitals and doctor's offices.

"If you're trying to move 750 million bits of information, that's just not something that [Integrated Services Digital Network] at 128K bit/sec. can move very well," he said.

ATM will also let Medlantic do more videoconferencing and offer interactive remote education, Brantley said.

Bell Atlantic is marketing its ATM service for distance learning programs, Internet access, telemedicine and government offices. It will offer ATM service at speeds that range from 10M to 155M bit/sec. Prices for 10M to 45M bit/sec. service start at $3,000 per month.

That price is unrealistic, said Tom L. Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. US West offers tariffed ATM at $1,100 a month, he said.

There is no way to aggressively pursue the market with a threshold price of $3,000 per month, he said. "Few organizations are takers at that price. I don't think there's any excuse for targeting

ATM, *page 60*

Empty packets

By Mindy Blodgett

A year ago, adherents of Cellular Digital Packet Data worried that slow network deployment would hinder its adoption because lack of availability would scare off potential users. The good news is that CDPD — which supports short, bursty transmissions via Internet Protocol-based wireless packet technology — is available in 73 markets, including major cities such as New York and Seattle, according to the latest report from the CDPD Forum in Chicago.

The bad news is the lack of users. "It took a lot of time to roll out, but the CDPD networks are there," said Iain Gillott, an analyst at International Data Corp./Link Resources in Austin, Texas. "Service and transmission quality have also gotten a lot better. But there just are not a lot of users."

But bad news for CDPD providers could be good news for users.

Industry observers and analysts suggest that carriers take advantage of the deregulation of the telecommunications industry to devise a different business model. They

CDPD, *page 60*

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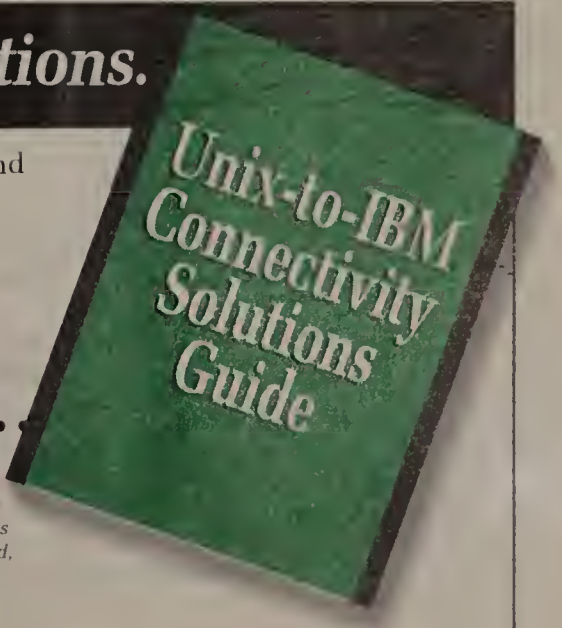

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F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
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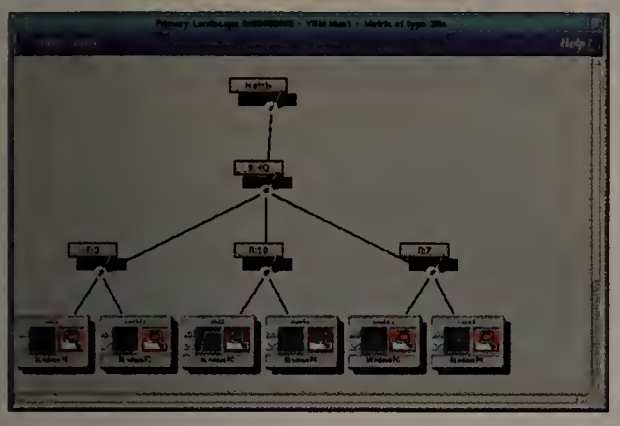


Integrated control: *Spectrum operators can distribute software and monitor stations with the integrated WinWatch LAN management tool*

Cabletron complements Spectrum management with BMC, Metrix tools

By Patrick Dryden

Cabletron Systems, Inc. pledged last week to deliver all the management tools administrators need to control their client/server domains.

Instead of just handling hubs, routers and links through its Spectrum network management platform, Cabletron will now sell and support integrated software from BMC Software, Inc. in Houston and Metrix S.A. in Luxembourg.

That means operators at a Spectrum console will be able to manage servers and applications equipped with BMC's Patrol agent software as well as workgroups of Windows-based PCs via the Simple Network Management Protocol agents provided by Metrix's WinWatch.

Two-pronged attack

This crucial move helps Cabletron in two ways, according to analysts.

First, Cabletron will appease Spectrum users who demand a single source for help in maintaining complex networking environments.

Second, it will more effectively compete with rivals that already deliver full tool chests.

"We're very happy with Spectrum for network management, so we would like to fold application and system management into it," said Jim Gogan, director of networks and communication at the University of North Carolina at Chapel Hill.

The combination should minimize training and streamline management policies for the network and computing operators in the university's command center, Gogan said.

"That would be ideal if our databases and LANs can feed alerts into the same system that manages our hubs and switches, so we get one set of trouble tickets," Gogan said.

Organizations such as the U.S. Postal Service still split their network and systems administrators. But Cabletron's new support might help troubleshooting teams.

"At times, we have to look at problems with the field support group [that has responsibility for systems, applications and LANs], so these options could eliminate some finger-pointing," said Dan McPhillips, telecommunications program manager.

McPhillips said he relies on Spectrum to manage the postal service's network down to the hubs and switches.

Cabletron officials say the company hopes to have the new tools fully integrated with Spectrum 4.0 in August.

This version is just beginning to ship in volume after it was delayed by testing from early upgraders.

Switching's triple play

Big 3 of internetworking announce more functional and affordable wares

By Bob Wallace

Users may get far more functionality for less money thanks to key products announced last week by internetworking powerhouses 3Com Corp., Intel Corp. and CrossComm Corp.

3Com last week rolled out SuperStack II, a series of products in one stack priced at a fraction of what it costs to buy chassis-based alternatives separately (see chart below). Users give "stackables" a big thumbs-up.

"With stackables, I can extend switching to the desktop and change my topology at will without disrupting my network infrastructure," said Steve Lopez, information systems manager at the National Board of Medical Examiners in Philadelphia.

SuperStack II Port Switch Hub gives network managers some of the benefits of switching at a lower cost.

Walter Fitzgerald, senior vice president of Yamaichi International (America), Inc., a brokerage in New York, began using 3Com stackables years ago to provide dedicated high-bandwidth pipes out to its trading floor. "They've had a very low cost per port and can be easily managed from 3Com's Transcend network management system," he said.

Hubs and switches

Right moves

Fitzgerald said 3Com is headed in the right direction in terms of the components and functionality it offers with the SuperStack II line. "I especially like the new uninterruptible power supply, which is a strong addition to the line and something we need for our mission-critical application," he said.

Intel expanded its fast-growing Fast Ethernet line with two products that will enable users to support the 100M bit/sec. technology without having to replace older Category 3 and 4 building wiring. It can also support Category 5, which is already supported on Fast Ethernet products.

Intel also unveiled a version of its EtherExpress Pro/100 Peripheral Component Interconnect (PCI) adapter card that supports the same wiring types as the new hub.

CrossComm announced RiserSwitch 100, which differs from other Ethernet backbone switches in that it has a high number of 100M bit/sec. backside ports. That means users don't have to consolidate servers; they simply tie them to the box, which is shipping now. The servers can be located up to 100 meters away using twisted-pair wire or 2 kilometers away using fiber.

Better, faster, cheaper internetworking products

Vendor/Product	Special features	Availability	Price
3Com SuperStack II	Combines the functions of a hub, switch and uninterruptible power supply in one stack with full Remote Monitoring support	Next month	$1,499 (12 ports) $2,199 (24 ports)
Intel Express Stackable hub	Can support up to 12 users and can be stacked six feet high	Now	$2,395
EtherExpress Pro/100 adapter	Works with PCI-based PCs and can run at 10M bit/sec. or 100M bit/sec.	Now	$149 each in a 20 pack
CrossComm RiserSwitch 100	Designed to break up backbone network bottlenecks using Ethernet switching. Has 14 switched Ethernet ports and eight 100M bit/sec. ports.	Now	$15,995

Shower of third-party utilities ends NT drought

Features of LANDesk Virus Protect for Windows NT

- Centralizes server-based virus protection
- Scans for all viruses within six common file compression types, including PKZIP and MS Compress
- Has multiple-event scheduler
- Includes integrated event log that details the origin of the virus infection
- Requires at least 16M bytes of RAM
- List price: $995 for a single-server license; $9,950 for 20 servers

By Laura DiDio

Users who have been working around the paucity of third-party security utilities for Windows NT Server will get some relief as a steady stream of products finally hits the streets.

Two of the newest security packages for Microsoft Corp.'s Windows NT Server are a virus package from Intel Corp. and a software encryption tool from Azalea Software, Inc.

Intel has just released a Windows NT version of its LANDesk Virus Protect software Version 1.6. It provides real-time scanning services that give users a centralized way to protect data from the most common types of viruses, including stealth, Macro and polymorphic, as the data passes through the server, said Ed Ekstrom, general manager at Intel's Network Products Division.

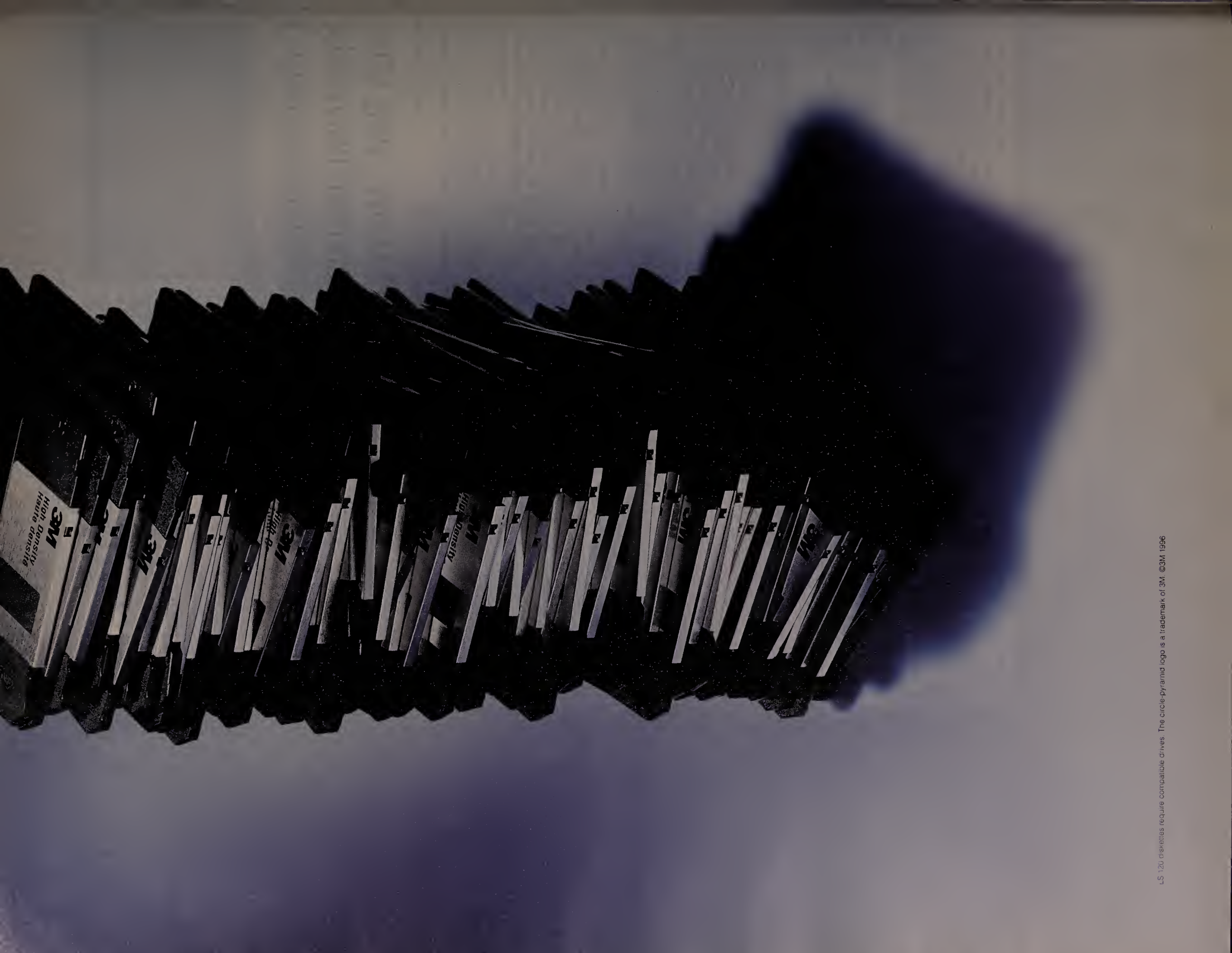
Network administrators can also use the LANDesk Virus Protect to automatically download free virus-pattern updates from Intel's bulletin board service to safeguard their networks from the newest viruses.

Right place, right time

Expert user Mark Minasi, president of Tech-Teach International, Inc., a consulting firm in Arlington, Va., said that although third-party security and management tools have been slow in coming for Windows NT Server, users can expect to see a dramatic increase in the number of available security and management add-ons in the next six to 12 months.

"This couldn't have come at a better time, since Windows NT Server installations are rising dramatically, and security is a top priority, especially among large organizations. Had we not started to see more widespread availability of third-party security and network management utilities, it could have hampered some installations," Minasi said.

Another third party that is following Intel's lead into the Windows NT market is Azalea Software in Seattle. The company has released Carrick 1.0, a new encryption tool for Windows NT, Windows 95 and Windows 3.x networks. It is available now and costs $159 per copy.



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New Products

Argent Software, Inc. has introduced Argent Global Alert 2.2 for Windows NT, a monitoring and alerting system that lets network administrators look at an entire Windows NT network from one screen.

According to the Torrington, Conn., company, Argent Global Alert 2.2 is a domain or enterprisewide real-time alerting system. It looks at all the nodes in the network and gives users relevant information about the busiest nodes and disk space that remains on nodes. It includes an Events Log Scanning engine that enables users to set scanning rules and alerts and a capacity planning feature that lets users take snapshots of the network and record them.

Argent Global Alert 2.2 supports common alerting interfaces, including pagers, electronic mail and the Windows NT messenger service. Pricing starts at $5,900 for 50 licenses.

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Hayes Microcomputer Products, Inc. has announced Century 2 Rack Modem System.

According to the Norcross, Ga., company, Century 2 Rack Modem System is a high-performance system for remote node, Internet and intranet access, modem pooling, remote control and fax server applications. It comes with a Simple Network Management Protocol (SNMP) proxy agent for compatibility with all leading SNMP-based LAN management packages.

The system is equipped with Hayes Optima 288 V.34 modems with eight times the compression. For local control, it has a graphical user interface for managing and configuring the modems.

Pricing starts at $4,799 for a chassis with eight modem line cards or $9,499 for a chassis with 16 modem line cards.

▶ *Hayes Microcomputer Products*
(404) 840-9200
www.hayes.com

CDPD

CONTINUED FROM PAGE 55

say CDPD carriers should consider reselling or including traditional telephone service along with wireless data services.

Carriers that sell wireless and wireline services could offer deep discounts as a way to attract users to the technology. And users could have one-stop shopping for their wired and wireless needs.

"For instance, now that there are no barriers between AT&T Wireless and the rest of AT&T because of deregulation, they could use wireless as a loss leader to bring in customers," Gillott said.

Several of the leading carriers, including AT&T Wireless, GTE Mobilnet, Ameritech Cellular Services and Bell Atlantic Nynex Mobile, have signed interoperability agreements that would allow easier "roaming" for users. Industry observers said there is also a need for applications in the wireless data market.

Sources said AT&T Wireless is expected to make some applications announcements next month, including news related to smart phones — mobile devices that combine features of handheld computers and cellular phones.

ATM

CONTINUED FROM PAGE 55

that small a market," he said.

Deaven said ATM is a premium offering, like the VCR once was, and is priced accordingly.

Of about 330 organizations nationwide that use ATM, less than 10% have wide-area connections, Nolle said.

Frank Schimberg, vice president of telecommunications at SunGuard Recovery Services, Inc. in Philadelphia, is considering moving from frame relay to ATM.

But Schimberg said wide-area ATM will arrive only when standards are ironed out and more flexibility is offered in its communications structure.

"People just aren't building what needs to be built because standards are so volatile right now," Schimberg said.

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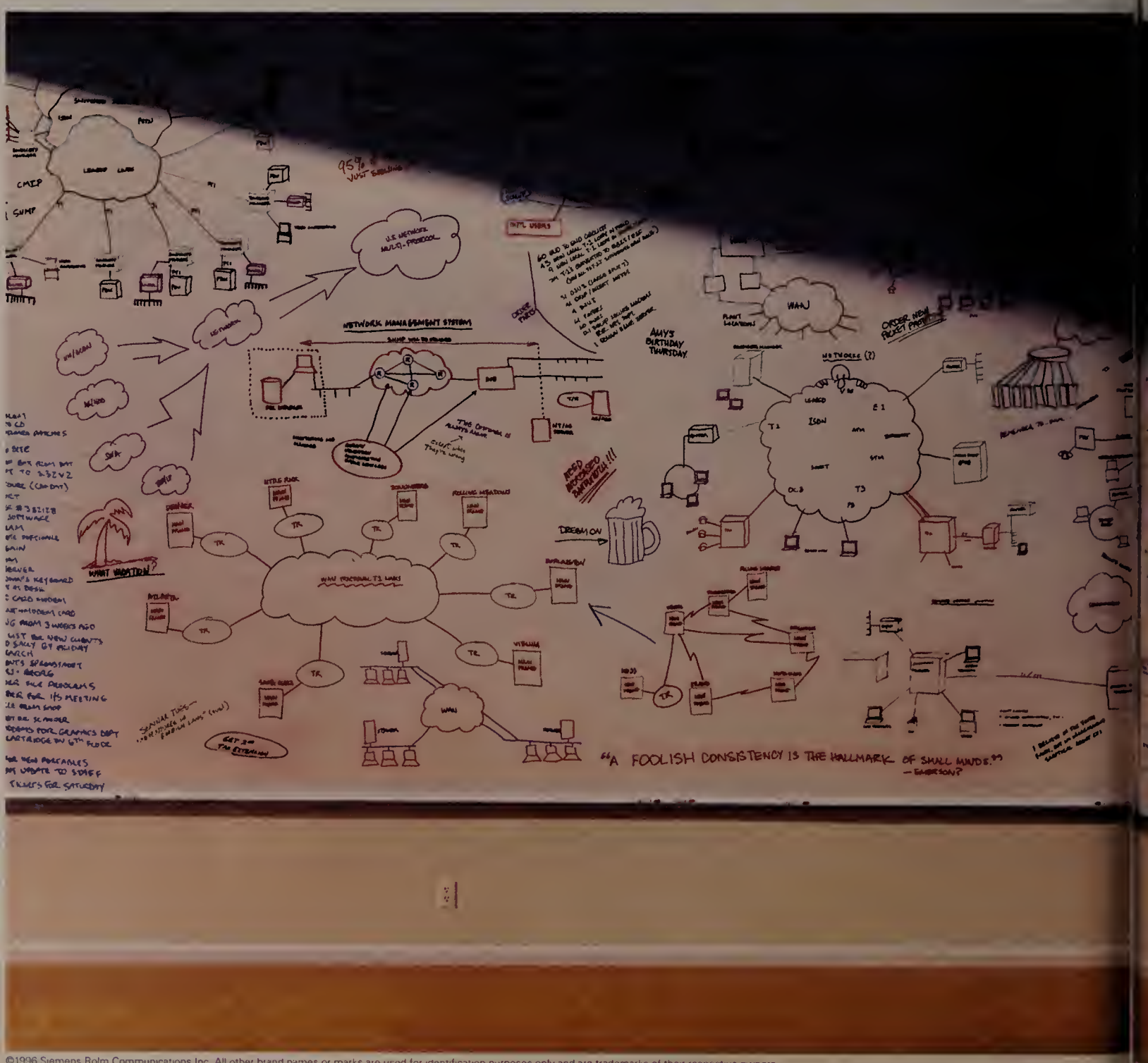

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SNA Server upgrade may give Microsoft edge

Software supports more host, client connections

By Laura DiDio

Microsoft Corp. recently announced a new version of its SNA Server gateway software that supports twice as many host and client connections and provides end-to-end security.

The increased capacity of SNA Server 3.0, which will ship two months after the summer release of Windows NT 4.0, was designed to appeal to the same large shops that Microsoft is targeting with NT Server, said Tim Wilson, an analyst at Decisys, Inc., a consultancy in Sterling, Va.

"The new features and scalability built in to SNA Server 3.0 give Microsoft a clear edge over its chief competitors: NetWare for SAA [Systems Application Architecture] and IBM's Communication Manager," Wilson said.

Cindy Borovick, manager of networking architectures at International Data Corp. in Framingham, Mass., said SNA Server 3.0 shipments will likely get a boost by the confusion surrounding NetWare for SAA.

Novell, Inc. last year signed a deal in which IBM took over development of the software. Novell continues to sell NetWare for SAA through resellers.

"Microsoft is taking advantage of Novell's lack of focus for NetWare for SAA, which has caused a lag in new releases," Borovick said. The new features in SNA Server 3.0 make it easier to use, and "the tight integration with Windows NT Server and the rest of the BackOffice suite is another big plus," she said.

SNA Server 3.0 includes the following:

- Single user sign-on to AS/400s and mainframes
- End-to-end data encryption for LAN/WAN security
- Shared Folders Service, a gateway that will let PCs without SNA client software access "shared folders" on AS/400 systems
- SNA Explorer, an integrated administration tool to simplify configuration and management
- Availability: 60 days after Windows NT 4.0
- Price: Not set

Jeff Klein, network administrator at the Idaho Department of Employment in Boise, agreed. Klein, who has used NetWare for SAA and SNA Server, said he has had a hard time keeping track of "who owns NetWare for SAA" — IBM or Novell.

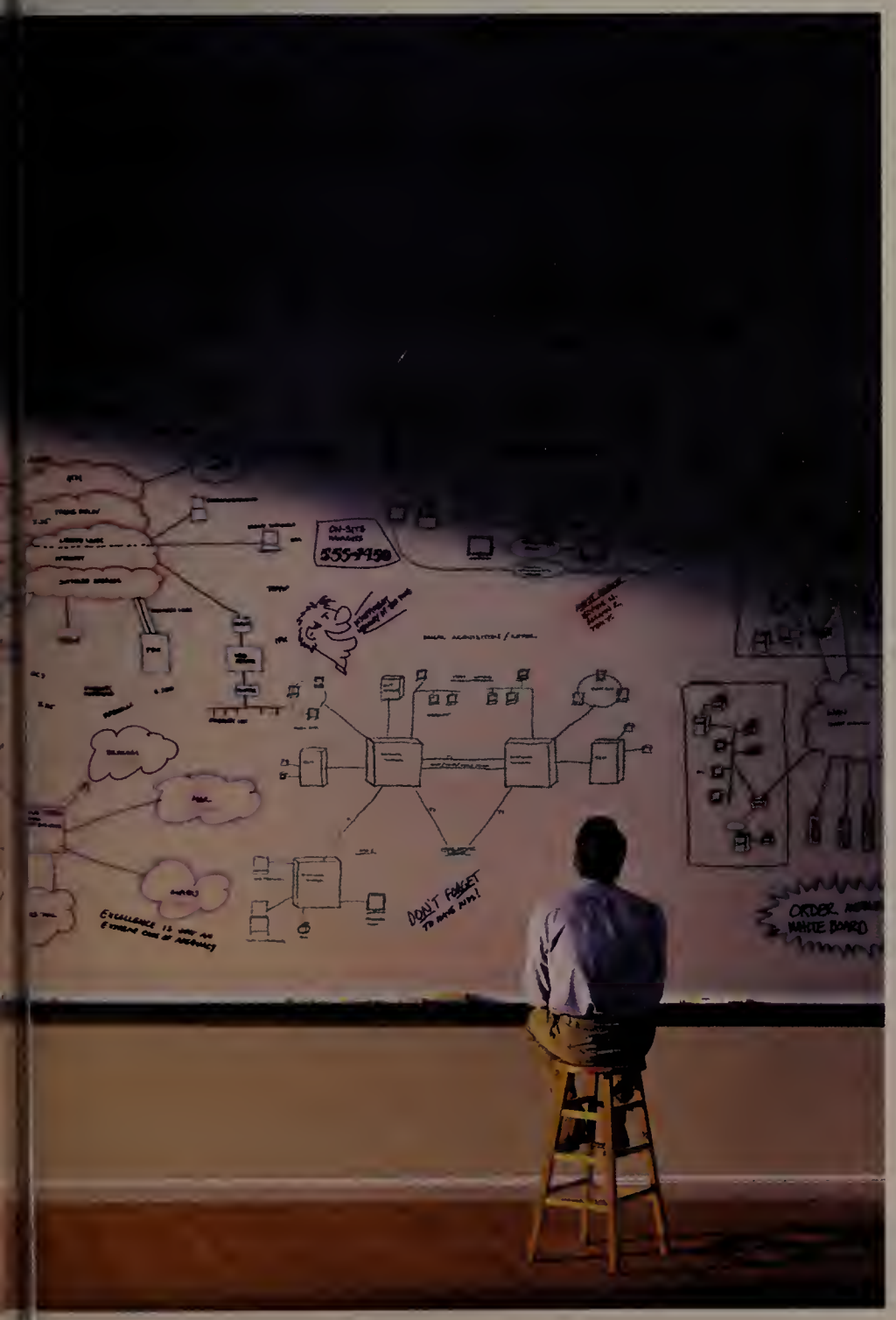
And at least six users *Computerworld* spoke with complained that NetWare for SAA routinely drops mainframe and AS/400 connections.

John Arendt, senior network analyst at East Alabama Medical Center in Opelika, also said technical support has become nonexistent since IBM took over NetWare for SAA product development. The medical center uses both SNA Server and NetWare for SAA.

The new features in SNA Server 3.0, code-named Red Hook, include data encryption; a single-user sign-on to AS/400 and mainframe machines, which eliminates the confusion of multiple passwords; and the Shared Folders Service, which allows PCs without SNA client software to access "shared folders" files on AS/400 systems.

That feature appealed to Klein. "It keeps life simple for me and my users. And the 3270 and 5250 print-server emulation saves me money because I don't have to spend $1,000-plus to buy a separate print server," he said.

ly job. Mind if we join you?



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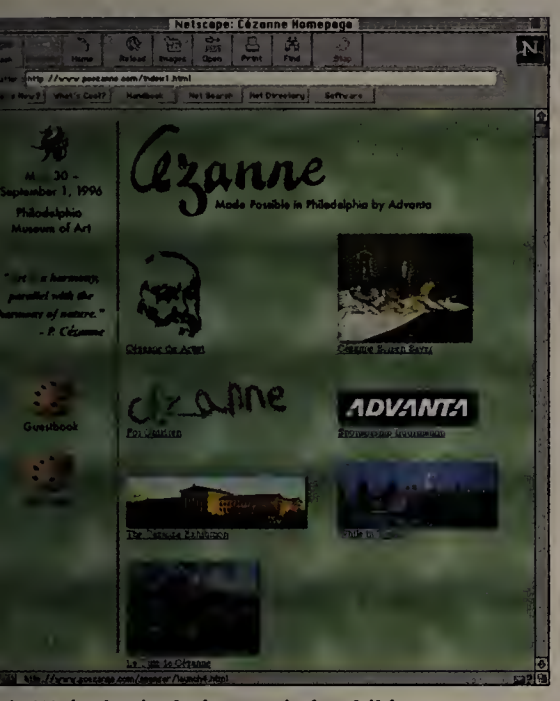
Overall rating:

Battle of the browsers: We review the latest from Netscape and Microsoft, 64

The Internet



his Web site *includes a quiz for children*

True masters

By Kim S. Nash

Ninety years after his death, painter Paul Cezanne, considered the father of modern art, lives on the World Wide Web. And the site's webmasters blended art with science to make it so.

Yet the programmers and designers behind the site (www.pcezanne.com) were asked to restrain themselves from applying too much snazzy technology to Cezanne's works.

The Philadelphia Museum of Art, which is the only U.S. venue to host the Cezanne exhibit as it travels this year, specified what could and couldn't be done to the artwork when it went online.

Three dimensions, animation and programming tricks with the Java language, for example, were off-limits. Instead, designers stuck to simpler Hypertext Markup Language and Common Gateway Interface code. The site is optimized for users with Netscape Communications Corp.'s Navigator browser.

No tampering

"We had to make sure we weren't taking Cezanne paintings and doing any modernization. Maintaining artistic purity was very important," said Tom Shea, vice president of sales and marketing at Logical Design Solutions, a Web consulting firm in Morristown, N.J. Logical Design was chosen to create the site by the exhibit's sponsor, Advanta Corp., a $16.1 billion financial services company in Horsham, Pa.

Art meets science: Cezanne Web site satisfies sophisticated tastes

For example, Advanta and Logical considered animating part of Cezanne's paintings. The companies also discussed building an animated screen saver that showed Cezanne scenes with water rippling and clouds blowing across skies.

But no go.

"That was tampering with the artist's images in a way that made the museum uncomfortable," said Phyllis Hoffman, vice president of corporate identity at Advanta.

Instead, a compromise shows four Cezanne paintings, seemingly being repainted stroke by stroke, onscreen.

The Web site lets Advanta subtly market itself. Even though the company has more than $16 billion in assets, it isn't as well-known in some circles as other financial companies, such as Prudential Securities, Inc. or The Chase Manhattan Bank Corp.

Cezanne's artworks *weren't altered*

"Our sponsorship is putting our company on the map," Hoffman claimed. The museum expects 500,000 in-person visitors and at least that many online.

A month of marathon programming and design produced several different online departments. For example, children can navigate through special educational areas and then take a quiz to see how much they learned. Art history is also part of the site as well as background information on Cezanne.

One of the advantages of supplementing a traditional art exhibit with a Web site is exposure, Hoffman said.

In its first week up — without advertising — more than 1,600 people visited the site, some from as far away as Japan, Norway and South Africa.

The Web site will remain active until the Cezanne show leaves Philadelphia Sept. 1.

'net configuration

Centralized client software manages widespread desktops

By Mitch Wagner

A subsidiary of the Internet service provider PSInet, Inc. has introduced client software designed to centralize the job of managing thousands of desktop systems that have access to the Internet or intranets.

InterCon Systems Corp.'s TcpConnect4 includes an electronic-mail client, a World Wide Web browser, file transfer software that uses the Internet file transfer protocol (FTP) and mainframe connectivity that uses 3270 terminal emulation.

The software was designed to make the lives of end users and information systems managers easier, partly by automating the configuration of Internet client functions.

Configuration files can be mounted on an Internet server and downloaded to individual desktops remotely, which saves minutes per desktop over the manual configuration of each system.

Internet, *page 64*

Intranets

Despite the fact that many vendors can't stop inserting the word "intranet" into each and every press release, the World Wide Web itself is only now starting to catch up.

Until recently, not many sites existed with good information about how or why to build applications that make internal use of public Internet technologies. Here are some sites we found:

- Wordmark Associates, a technology training firm in Houston, provides an intranet tutorial at **webcom.com/wordmark/sem_1.html**. The pages also include predictions about where intranet ideas are going and comments on the Microsoft vs. Netscape battle.
- A similar educational site, with explainers and case studies, is run by *WebMaster* magazine, a sister publication of *Computerworld*. See **www.cio.com/webmaster/sem3_intro.html**.
- The Intranet Journal offers an oft-visited discussion group at **www.brill.com/intranet/**. Recent topics included how to pitch intranet projects to managers and issues in building an intranet for human resources applications.
- Information about events, frequently asked questions and products can be found at The Complete Intranet Resource. Also there, at **www.lochnet.com/client/smart/intranet.htm**, is a list of job openings. A New York insurer, for example, recently sought a webmaster at a salary cap of $51,000.
- *Computerworld* is a sponsor of Intr@net '96, a conference in San Jose, Calif., this week to help information systems managers sort out the nuances of bringing the Web indoors. See the TechCity pages at our Web site **www.computerworld.com** for details.

- Kim S. Nash

Netscape vs. Explorer

By Garrett N. Ray

Only a month ago, the obvious choices among the Top 10 or so World Wide Web browsers were Netscape for Windows, Netscape for Macintosh or Netscape for Unix.

As the standard-bearer of the Web revolution, Netscape Communications Corp.'s dominance in browser technology has been unquestioned. And for good reason. The company has offered a solid commitment to cross-platform support, unyielding adherence to public standards and a relentless drive to invent and deliver new Web technologies.

But Microsoft Corp.'s recently unveiled beta version of Internet Explorer 3.0 narrows Netscape's lead in browser technology to the thinnest of margins. Microsoft's Explorer 3.0 doesn't quite grab the baton from Netscape 3.0 (also in beta release), but the enhancements to Explorer serve notice that a serious battle for the Web desktop is soon to commence.

Fortunately, that's all good news for corporate users.

Standards

Standards are the key to Netscape and Internet Explorer.

Given the cross-platform nature of the Web, it is unthinkable to snub evolving standards such as the Secure Sockets Layer (SSL), Hypertext Markup Language (HTML) or Sun Microsystems, Inc.'s Java. Both browsers pay

homage to these and include future or delivered support for what seems to be every conceivable Web standard, including those relating to audio, video, security and scripting.

For example, both browsers support HTML 3.2 and SSL 3.0. Both include extensions for a range of video and audio file formats. Both support Java and JavaScript.

On the major questions of browser evolution, Internet Explorer 3.0 and Netscape 3.0 are in complete agreement. The obvious point of departure revolves around Java and ActiveX extensions.

Java and JavaScript were developed outside the purview and control of Microsoft. ActiveX, on the other hand, is merely the latest evolutionary step in Microsoft's OLE and Dynamic Data Exchange standards. Both accomplish approximately the same purpose, enhancing the functionality of the browsers while opening them to customization by corporate and third-party developers.

Explorer 3.0, of course, includes complete support for ActiveX capabilities, including applets, the ability to embed ActiveX documents in Web pages and scripting. Although ActiveX support currently is limited to Microsoft's Windows 95 and Windows NT platforms, Microsoft has announced that it will deliver versions of ActiveX for Macintosh and Unix systems.

The browser also will include Java support through an ActiveX applet, but that feature wasn't available at press time.

Netscape 3.0 has no native ActiveX support — although third-party suppliers are promising such support, and it would be wise for Netscape to do so, too.

But Netscape fully supports Java and JavaScript. Truly a cross-platform technology, Java provides for scripting and binary application development. Java's execution speed seems slightly less impressive than that of ActiveX. That makes sense because ActiveX is more closely wedded to the Windows platform than is the Java interpreter included with Netscape.

In the short term, it is likely that both browsers will support both types of extensions.

For developers, Java enjoys widespread third-party support with regard to tools and general interest. Microsoft's ActiveX software developer's kit had just been released for beta testing at press time and is now available for downloading from the company's Web site.

Multimedia

As mentioned, Explorer 3.0 and Netscape 3.0 support a wide array of audio, video and multimedia standards and file formats. Both support JPEG, graphics interchange format (GIF), animated GIF, RealAudio, Audio Format, Musical Instrument Digital Interface, Audio Video Interleaved, MPEG and QuickTime.

Netscape 3.0 supports Virtual Reality Modeling Language (VRML) 1.0 through its Live3D plug-in. Live3D supports several controls that make it possible to interact with a three-dimensional "world." Performance is good. Although VRML applications are fairly limited at this time, new developments in Web server technology — including real-time, session-managed access to back-end databases — bring to mind some intriguing possibilities for VRML, such as "flying" through a travel database.

Microsoft officials said Explorer also supports VRML, but the ActiveX applet that provides that support wasn't available for review at press time.

Mail and conferencing

Both browsers include Internet mail — Post Office Protocol-3 and Simple Mail Transfer Protocol — and Usenet news clients. Little beyond superficial implementation distinguishes the two. Microsoft officials have said a future version of its news reader will include offline capability, which would be a boon for work-at-home employees.

Both news readers operate in online mode and include support for message threading. Microsoft Internet Mail and News 1.0 seemed to offer better integration with the Windows 95 environment, such as use of the Microsoft Office 95 spell checker.

In their 3.0 releases, both browsers include support for Internet conferencing, though in different fashions. Explorer 3.0 may have gained the upper hand here with its WhiteBoard, chat, file transfer and remote operation capabilities. The remote operation capability allows users to access and execute programs on a remote system.

Netscape 3.0 doesn't support those features, but it includes the CoolTalk applet for Internet telephony. We were unable to test CoolTalk due to difficulties in reaching the Netscape telephony server.

Conclusion

Given the head-to-head similarities of Explorer 3.0 and Netscape 3.0, it is difficult to choose one over the other based on any plausible feature or enhancement. Both are evolving products, and both exhibit similar usability and performance. An argument about such characteristics would quickly devolve to religious bickering.

In the end, those firmly in the Microsoft camp, especially those who have deployed Windows 95, will want to consider Explorer 3.0. The browser is ready for prime time, and Microsoft clearly intends to develop it within the mainstream of Web standards.

For those who are adamant about open standards and cross-platform deployment — regardless of their commitment to Microsoft — Netscape 3.0 is the winner because it is likely that Netscape will continue to drive these issues, just as Microsoft pays them grudging support.

Ray is a writer and consultant in North Conway, N.H. His Internet address is gnray@dns.nxi.com

Beta browsing

Computerworld performed an evaluation of the newest beta-test versions of Microsoft's Internet Explorer 3.0 and Netscape Navigator Atlas Preview Gold Release 2 (Netscape 3.0). Both browsers can be downloaded, respectively, at www.microsoft.com and www.netscape.com.

Feature	Netscape 3.0	Internet Explorer 3.0
Overall rating:	A-	B+
Multimedia	A	B
Graphics support	A	A
Extensibility	B	A
Platform support	A	C
Third-party support	A	B
Interoperability	A	C
Usability	B	B
Performance	A	B
News	C	A
Mail	B	A

Internet client configuration

CONTINUED FROM PAGE 63

"That eases the job of rolling out the product, which diminishes a key stumbling block for network managers," said Cindy Borovick, an analyst at International Data Corp. in Framingham, Mass.

Configuration files can be set up to prevent end users from changing the files on their own desktops.

The TcpConnect4 software is distributed on a single "hybrid" CD-ROM that can be used to install its Windows 3.1x, Windows 95, Windows NT and Macintosh versions.

Same across the board

The software was designed to offer the identical look and feel across all the Windows and Macintosh versions, which cuts down on training, according to Anthony Kelly, vice president of marketing at InterCon in Herndon, Va.

The software includes a browser written by InterCon. Borovick questioned whether the browser might prove to be a nuisance for network managers, who might get stuck with nonstandard software.

"Everyone is standardizing on either Microsoft Explorer or the Netscape browser," she said.

User Ernest Hockaday, a manager of mainframe connectivity at US West, Inc. in Littleton, Colo., said he is particularly pleased with the 3270 emulation offered by TcpConnect4.

"The key-mapping configuration is pretty good. A lot of other applications out there don't handle key-mapping very well," Hockaday said.

InterCon's competitors in client Internet software suites include NetManage, Inc. in Cupertino, Calif., and FTP Software, Inc. in North Andover, Mass.

The InterCon client software is priced on a per-seat basis and is also based on the breadth of functionality desired.

Prices range from $18.40 to $72.50 per user for 1,000 users and from $115 to $495 per user in single-user configurations.

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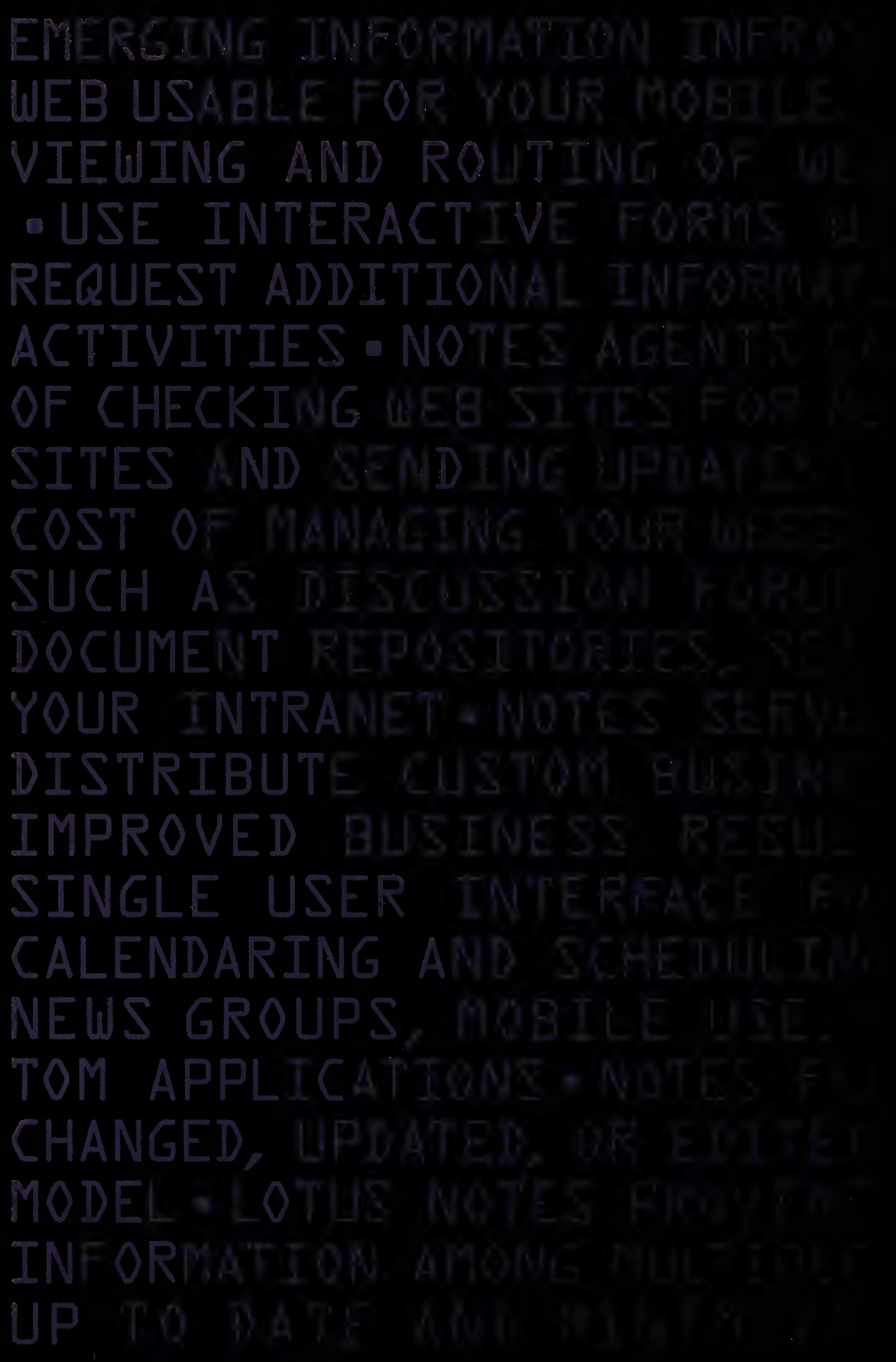

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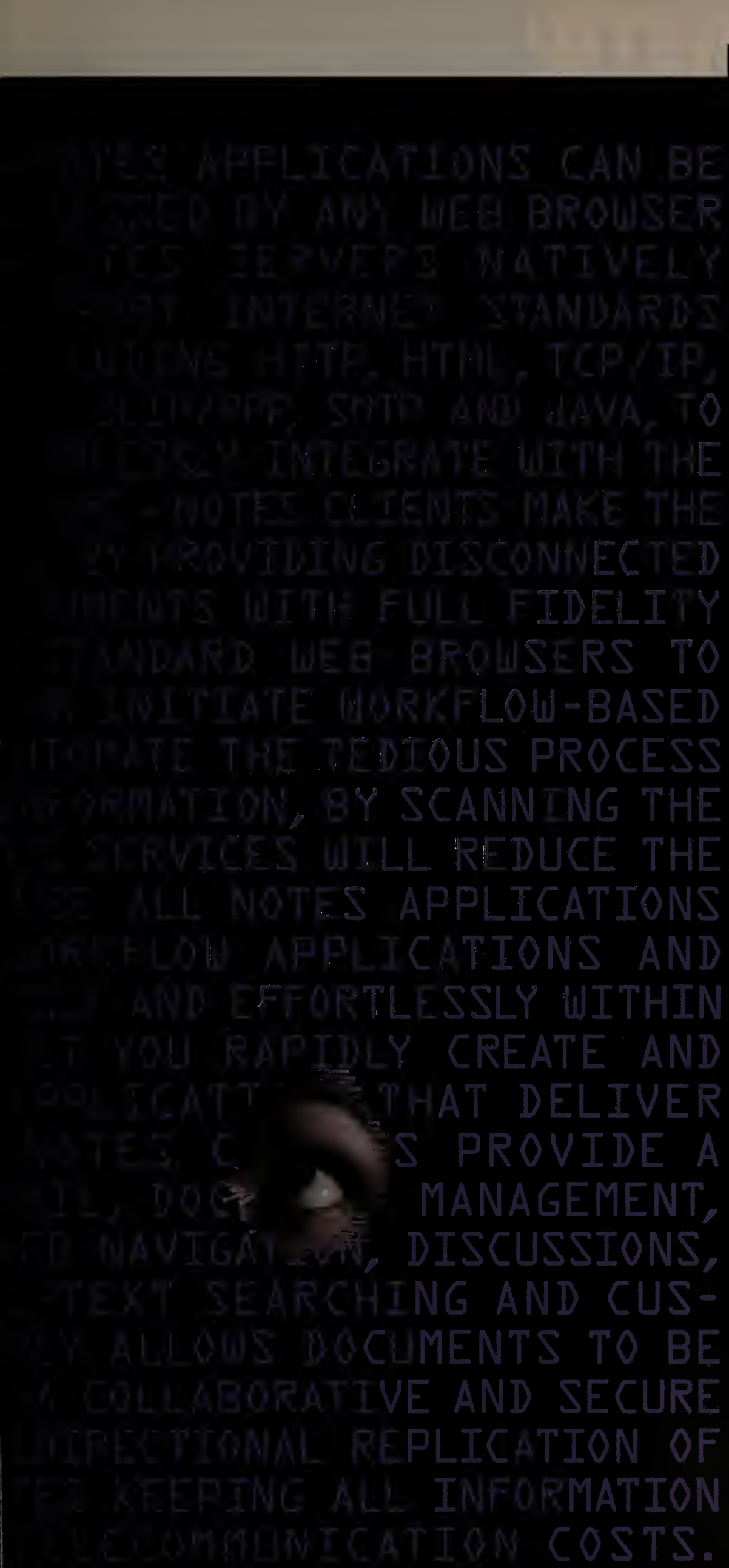

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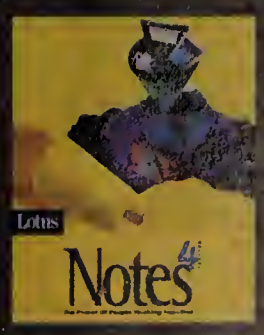

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COMPUTERWORLD

JUNE 24, 1996

Easy money, [illegible] decisions

Is ROI passe?

By Brian McWilliams

[illegible] come in smaller packages

The value of data marts

By Alice LaPlante

Don't skimp on [illegible]

Knowledge unlocks the warehouse

By Julia King

Bill Parker, CIO
Agway, Inc.

Part One: Planning for the Future

Data Warehousing

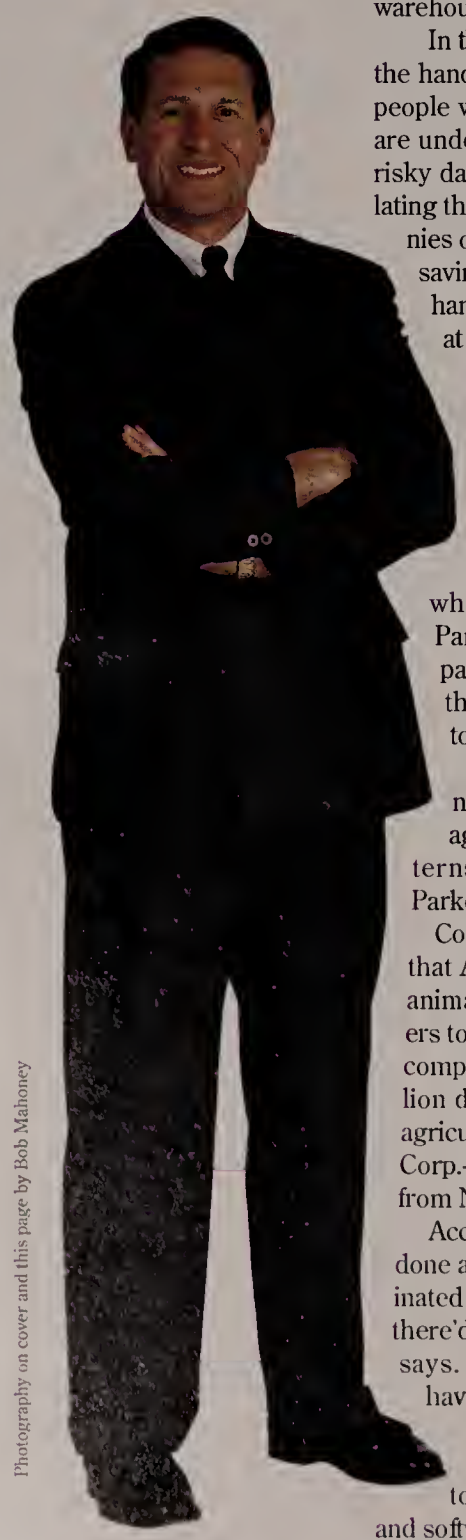
Easy money, tough decisions

Data warehouses are essential to support fact-based decision-making. So why do many companies rely on intuition to justify them? Is ROI passe?

By Brian McWilliams

"We had a $1 million improvement in the business this year, and the warehouse gets much of the credit."

Bill Parker
CIO
Agway, Inc.



Photography on cover and this page by Bob Mahoney

Like most accountants, Hal Zesch is a fairly quantitative guy. As assistant controller at Valero Energy Corp. in San Antonio, he's not prone to spending the company's money lightly. Yet when he proposed building a half-million-dollar data warehouse for accounting users two years ago, Zesch didn't bother to work up hard payback figures. And Valero's CEO, who approved the project, didn't ask for them.

"I never did an ROI. Basically, it got down to a feel by a certain number of people that the warehouse was the best solution," Zesch says.

In their eagerness to get information into the hands of decision-makers, many business people who normally demand hard numbers are undertaking large, costly and technically risky data warehouse projects without calculating the return on investment. "Most companies only have hypotheses about where the savings will come from," says Steven Graham, vice president of software research at International Data Corp. in Toronto.

Firms often forgo formal ROI analysis because they consider the data warehouse a strategic investment. When the head of Agway, Inc.'s agriculture group recently sponsored a group-specific data warehouse, or data mart, "we could only guess at what the benefit would be," says Bill Parker, CIO of the Syracuse, N.Y., company. Still, management was adamant that having better information on customers could improve operating results.

"We had been running the business mostly on gut feel. We never really aggregated data or looked at buying patterns or the profitability of customers," Parker says.

Consolidation in the farm industry meant that Agway had to work smarter to sell its animal feeds, crop protectants and fertilizers to fewer customers. So, in late 1994, the company decided to plunk down a half-million dollars to pull operational data on its agriculture business into a 12G-byte, Oracle Corp.-based data mart running on a server from NCR Corp.

According to Parker, no one at Agway has done an ROI for the project. "If we had eliminated a transactional system in the process, there'd be some hard savings to point to," he says. But Agway's only ironclad savings have come from eliminating a few ad hoc reports that IS had been doing for customers. And that doesn't come close to offsetting the cost of new hardware and software for the data mart.

No matter. For the agriculture group, the focus these days is on growing the top line. And the six-month data mart project, which was completed in June 1995 and provides access to both managers and remote employees, has done wonders, Parker says. "We had a $1 million improvement in the business this year, and the warehouse gets much of the credit," he says.

You'll get no argument about the strategic value of data warehousing from IDC's Graham, who led a recent study on the financial impact of the technology. (See "Many happy returns," right.) Unlike some pundits who dismiss data warehousing as a fad, he calls it "the management foundation of the next century." Yet Graham and other consultants warn that forging ahead on intuition may spell trouble down the road.

Get hard numbers

"Rapid application disasters are becoming all too prevalent today," says Kevin Strange, research director for Gartner Group, Inc.'s strategic data management service in San Jose, Calif. "The heat is on from users to get warehouses up and running fast, so people are cutting corners."

One common mistake is inadequate attention to architecture. Warehouses need to be designed for the long haul, with the flexibility to add new subject areas and evolve as the organization's needs change, Strange says. Yet many warehouse planners are doing all of their database design around a specific application.

"The biggest benefit comes down the road, when you can support 20 different decision-support applications with the same architecture," he says.

Strange says that doing ROI studies up front forces companies to spell out clear economic goals and pinpoints any problems with those assumptions. Further, having hard numbers on benefits can prevent political problems when the warehouse displaces investments with measurable returns, such as a new plant or sales office.

"At some later point, somebody is going to start asking for proof of value," Graham says. "They'll have no trouble pointing to the ware-

Many happy returns

Data warehouses deliver on the promise, according to IDC study

With all the vendor hype swirling around data warehousing, many IS professionals find themselves in the awkward position of talking down the financial benefits of the technology. After all, how do you put a dollar figure on getting better information to decision-makers?

That's exactly what researchers at International Data Corp. sought to do in a report on the financial impact of data warehousing, published in April. IDC performed in-depth interviews with business end users and IS professionals at 62 organizations in a broad range of industries around the world. Then, using standard return on investment formulas, IDC ran the numbers. The average three-year ROI for all types of data warehouses was a whopping 401%. One-fourth of the participants showed returns in excess of 600%. The average time required for payback: 2.3 years on costs that averaged $2.2 million.

According to IDC project director Steve Graham, three types of financial benefits were studied:

- **Keepers.** Money saved or costs avoided by not having to support traditional decision-support activities. (For example, achieving net savings in hardware maintenance and support costs by moving an application off a mainframe and into a client/server data warehouse.)
- **Gatherers.** Efficiency gains from increased productivity among professionals who gather and analyze data. (Reducing, for instance, the time a financial analyst spends collecting customer profitability information and formatting it into reports.)
- **Users.** Savings due to decisions based on analysis in which the only source of information was the data warehouse. (For example, eliminating inventory and associated costs through better understanding of sales data.)

For IS, the good news from the IDC study is that the benefits of data warehouses aren't just qualitative. The bad news is that the impressive quantitative results may send already high user expectations into the stratosphere.

— Brian McWilliams

Data warehouse *noun* 1: a process that collects data from various applications in an organization's operational systems, integrates the information into a logical model of business subject areas, stores it in a manner accessible to decision-makers and delivers it to them through report-writing and query tools. The goal is to put standardized and comparable corporate information into employees' hands, enabling an enterprisewide view of the business.

house's costs, but can you show the benefits?"

Ominous as that may sound, most organizations aren't even doing much after-the-fact measurement of payback. How can that happen? Data warehouse projects often are protected from internal sniping by strong air cover from top management.

Managers at Signet Banking Corp. in Richmond, Va., for example, threw their support behind the company's data warehouse. They saw it as a key to supporting information-based decision making, says David Knellinger, architect of the bank's business systems.

Signet invested roughly $2 million in an operational data store and several data marts, hosted on Sun Microsystems, Inc. servers running Oracle 7. The system, online since 1994, gives managers at the $9 billion bank better data for analyzing marketing campaigns, customer profitability and operational efficiency.

What was the anticipated bottom-line impact? No one knows.

"We took it on faith that it would generate value," Knellinger says. "Management was committed to taking the risk even without a guaranteed return."

Similarly, senior management at Sears, Roebuck and Co. decided, as part of a five-year strategic plan, that "a world-class data warehouse was necessary infrastructure," says Steve Junk, vice president of retail systems at the Hoffman Estates, Ill.-based company.

Without performing a formal economic justification for the project, Sears built a multimillion-dollar, 1.8T-byte warehouse, running on an NCR 3600 massively parallel processing system. It provides information on store operations to roughly 1,800 buyers, replenishers, marketers and strategic planners. According to Junk, Sears chairman Arthur C. Martinez uses the system regularly and is a vocal supporter.

Measure user acceptance

Although consultants recommend precisely quantifying data warehouse benefits, many IS managers argue that it can't be done. For instance, Valero's Zesch says his company's warehouse is viewed internally as a good investment, but he doesn't plan to work up an ROI to prove it. "It's really hard to quantify the value of this kind of system," Zesch says. "You could probably come up with some numbers, but it would all be built on guesswork."

The important thing, Zesch says, is that accountants in the three business units served by Valero's warehouse say they have better information about which markets and customers are the company's true profit drivers. And they no longer have to go searching for information; they get it off the network. "That's about the best you can hope for," Zesch says.

Indeed, whether they believe the cost/benefits from data warehousing can be measured or not, most IS managers and consultants agree that achieving payback on a data warehouse depends largely on user acceptance.

So go ahead. Run the numbers as best you can. And don't despair if you get a negative ROI the first time. "It doesn't mean the project should be shelved," Graham says. "On the contrary, that just tells you where you need to work to get savings."

McWilliams is a freelance writer based in Durham, N.H.

Drilling deeper

For more information on data warehousing, take a look at these Web sites.

- **http://www.tekptnr.com/tpi/tdwi**
The Data Warehousing Institute home page. Includes white papers, articles, a directory of vendors and lessons from experts.

- **http://pwp.starnetinc.com/larryg/index.html**
Data Warehousing Information Center home page. Articles, white papers, newsgroups and vendor information can be accessed.

- **http://www.psgroup.com/datmgtop.htm**
Patricia Seybold Group, an IS consulting firm. This Web site page includes article summaries and other information on data management.

- **http://www.cait.wustl.edu/cait/infosys.html**
Page on site of Center for the Application of Information Technology, part of Washington University's School of Engineering and Applied Science. Provides information on various IS topics, including data warehousing.

- **http://www.butlergroup.co.uk/butgrp/techaud/whrcat. htm**
The Butler Group, an IT consultancy based in the United Kingdom. Site offers technology audits of some data warehousing products.

- **http://www-db.stanford.edu/warehousing/publications.html**
Stanford University site offers a list of data warehousing articles.

Commentary: Making the warehouse work

For data warehouse initiatives to succeed, IS must help managers buy in to maximizing the technology

By Chris Horrocks

Informal polls of business executives in the past two years show great dissatisfaction with the results of corporate data warehousing initiatives. In these surveys, 85% to 90% of senior executives say their data warehousing projects have failed. These failures weren't technical, nor were they due to major lapses in project management. The systems were viewed as failures because they hadn't made money.

The reason they didn't make money is that they hadn't become part of the fabric of companies' management processes and were not being leveraged to any significant economic extent. Although these problems had nothing to do with the systems' capabilities or architectures, responsibility likely will be placed with the CIO. This is unfortunate, because the cause of the problem rests with the use, not design, of the systems.

Unlike systems developed to support business process re-engineering efforts, which focus on reducing costs and streamlining operations, data warehouses make management process re-engineering possible. The difference is that data warehouses help companies avoid costs before they occur, and warehouses capitalize on business opportunities that previously would not have been recognized. Furthermore, the payback from a data warehouse — used properly — tends to be vastly larger than any gains that typically result from improvements made by operational systems.

Because of the potential for great gain, data warehousing will have a dramatic impact on the relationship between the IS organization and the ultimate users of the system that IS develops. Consider the following:

- The data warehouse user tends to be at a far higher organizational level than the user of operational systems, which presents potential problems in rank. The IS staff must adapt and learn how to interact with senior business managers.
- IS staffs normally are not strong in strategic planning skills, yet this is the domain in which data warehousing operates. The IS department must become better versed in strategic issues about the industry and company.
- Because the data warehouse will introduce economic gains that have been available but ignored for a long time, IS must avoid implying that senior executives failed to recognize these potential gains earlier. IS managers must learn discretion.

In short, data warehousing can generate considerable benefits. IS can facilitate this by helping executives see that data warehousing is not a technical issue on par with operational systems and by recognizing that new ways of managing are needed.

Horrocks is senior partner specializing in data warehousing at Computer Sciences Corp. He can be reached at chorrock@cscmail.csc.com.

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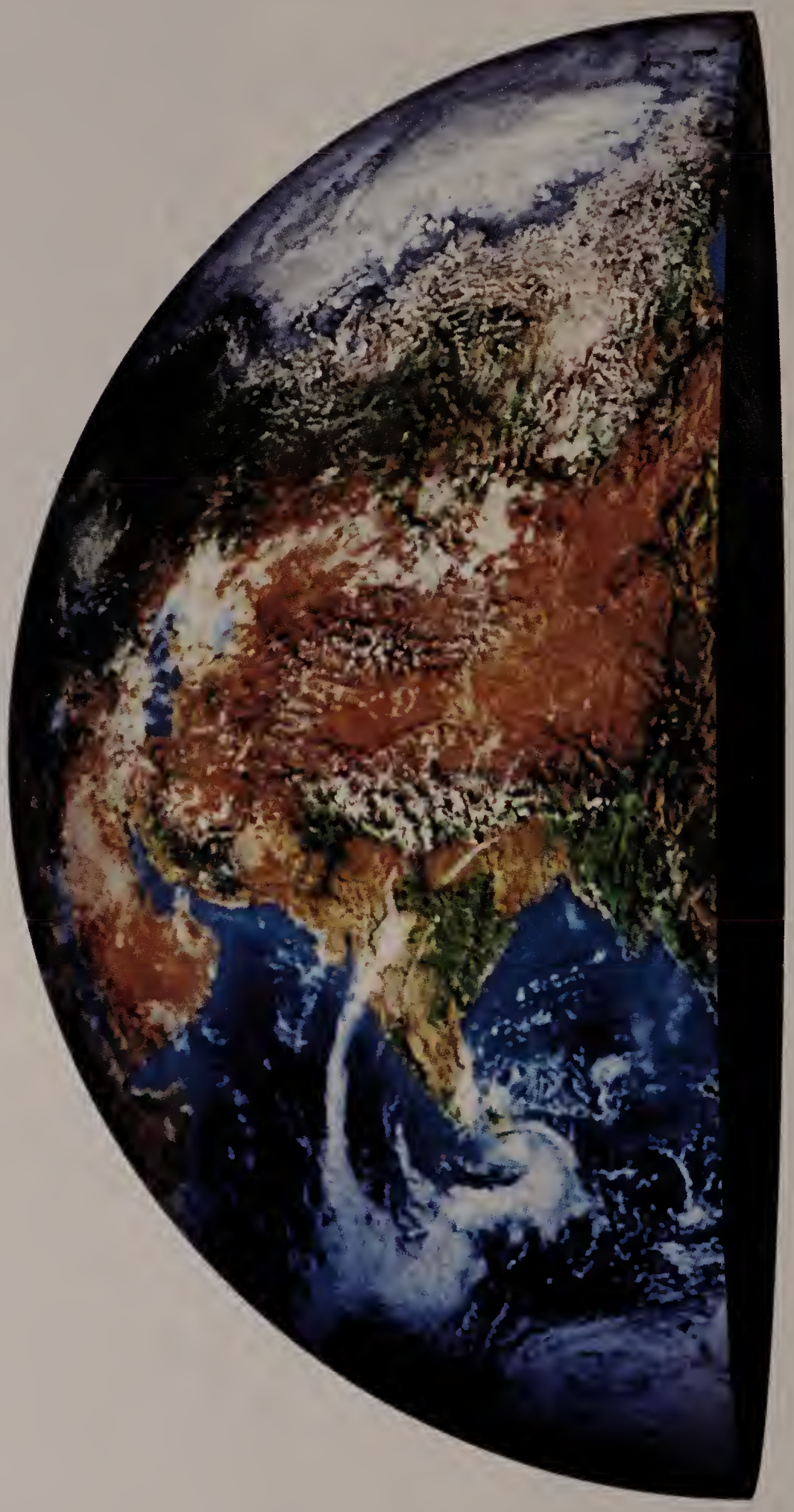

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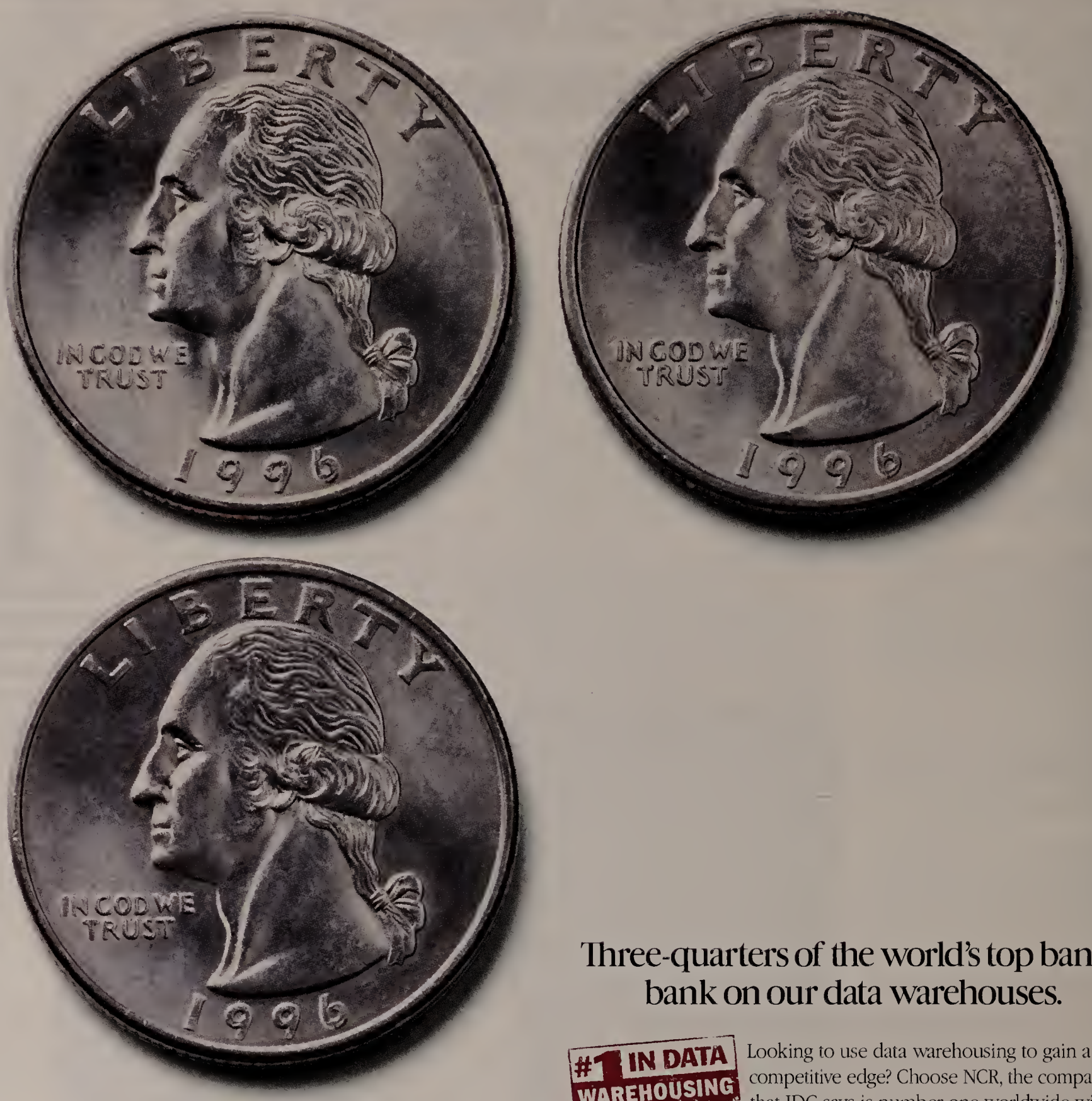

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Retail IS has to get more for its dollar, 76

Corporate Strategies

Grazing the 'net

Concerns about mad cow disease abate with online document management system

By Tim Ouellette

In Northern Ireland, software is becoming part of the cure for "mad cow" disease.

A messaging and document-management system helped the Department of Agriculture in Northern Ireland (DANI) combat the rumor and innuendo associated with mad cow disease by helping farmers to get correct, updated information more quickly.

The system also lets DANI employees proactively manage the documents they need — an emerging trend in the computer industry, observers said. In other words, the system will notify DANI users about changes and updates to key documents about the disease they track regularly.

Information via modem

The system lets officials collaborate on important health and safety documents for farmers. DANI employees, in turn, can notify farmers more quickly. Farmers currently are told the information in person. But in the not-too-distant future, DANI hopes to make the information accessible to the farmers directly, via the Internet.

Mad cow disease, also known as bovine spongiform encephalopathy (BSE), is hitting the pocketbook of England's cattle industry hard due to bans on U.K. beef imports.

BSE has stricken cattle — about 150,000 in Great Britain and Northern Ireland — since the late 1980s and has raised concern that related beef products, animal feed and fertilizer that come from herds in the U.K. could infect humans with the similar Creutzfeldt-Jakob disease.

As a beef exporter, Northern Ireland needed to get a handle on the specifics of the disease and the growing paperwork demands of government regulations and research.

DANI officials use Uniplex Software's OnGo Office and OnGo DMS software to create health assessment documents about BSE. They take advantage of the built-in workflow and electronic-mail capabilities to route the documents through the approval process before getting them out to the public. Project leaders previously created and distributed documents on paper and often duplicated one another's efforts.

SUSAN KWAS

"BSE has added considerably more paperwork to our workload," said Barry Lowry, senior systems analyst at DANI.

"But now in Northern Ireland we feel as though we have got [BSE] under control," he said.

With OnGo DMS, hundreds of DANI advisers in local offices can access the correct data on maintaining control over beef products and providing safe fertilizer and feed.

The advisers then communicate that information to thousands of small farmers in the countryside.

The next phase for DANI is to give farmers even better access to new information by letting them view reports from World Wide Web browsers.

"We are still [in the] very early days on that route," Lowry said. "One thing we don't have is a good Web-based search engine yet."

Bank manages risk enterprisewide

By Thomas Hoffman

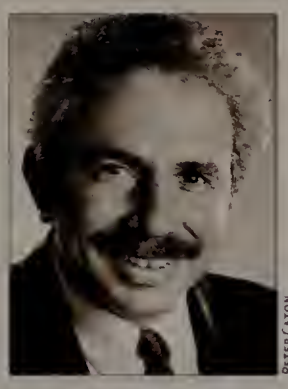
To make sure it doesn't get hoodwinked by traders who make unauthorized deals, the Canadian Imperial Bank of Commerce (CIBC) in Toronto is installing an enterprisewide risk management system.

The idea is to prevent fraud — or at least nip it in the bud.

CIBC hopes the system will let it monitor its total daily exposure across all its locations and products, including derivatives and commodities.

Derivatives are complex financial instruments whose value is "derived" from interest rates and other market conditions. Commodities are bulk goods, such as grains and metals, traded on commodities or "spot" markets.

Even though CIBC's risk management strategy includes its retail banking operations — such as home equity loans — investment banking and capital markets are "clearly the fastest growth areas in the bank," said Aleem Gillani, a vice president in risk advisory at the $180 billion institution.



PETER CATON

CIBC's Bob Mark: *'Source systems don't communicate'*

No talk

One of the biggest challenges for banks such as CIBC is that it is difficult to gather and collate trading data at the transaction level because these systems are typically run as minifiefdoms and weren't designed to communicate.

For example, a fluctuation in the German deutsche mark may have a serious ripple effect on foreign exchange trading in Singapore. But most risk management systems weren't designed to make such correlations.

"There's an enormous amount of information in the source systems, but the problem is that the source systems don't communicate with each other," said Bob Mark, executive vice president of market risk management at CIBC in Toronto.

To tackle this problem, CIBC and Hewlett-Packard Co. have built 75 bridges to more than 21 risk management legacy systems around the world.

Transaction and market data is collected daily using Unison Software, Inc.'s Maestro scheduler. The data is cleaned up and standardized in a Sybase, Inc. relational database management system.

CIBC's Singapore, New York and London trading desks are tied in to its Toronto data center through T1 connections.

Prism Solutions, Inc.'s Warehouse Manager software filters the data from the mainframe feeds into the Sybase warehouse. Visual Numerics, Inc.'s PV Wave data analysis tools let CIBC's 160 risk management staffers graphically view investment, trading and other risks using a Windows-type graphical user interface.

CIBC has invested less than $10 million during the past three years in its global risk management project, which includes analytic software, the Sybase database and the HP server.

Thanks to its efforts, CIBC "has a better handle on credit risk than a lot of other banks," said Patricia McGinnis, an analyst at The Tower Group, a consultancy in Wellesley, Mass.

Other banks such as J. P. Morgan & Co. and The Chase Manhattan Bank Corp. are trying to consolidate their risks globally, but "there aren't a lot of banks who can do that on a nightly basis" because the data comes from so many different locations, products and business units, McGinnis said.

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SunSoft

Insurer expands coverage of its data warehouse

By Jaikumar Vijayan

Blue Cross/Blue Shield of Illinois for the past four years has used a data warehouse to track healthcare costs for its largest business customers.

Now it wants to use that data to help change business practices — its own and its customers'.

"For instance, suppose I wanted to convert to a different set of providers," said Julio Chavarria, manager of Blue Cross' customer information services center. "How would that impact our subscribers and the amount that they pay for their health care?"

Information resources

"Essentially what you are doing is speculating based on the best practices" in the area, said Robert Moran, an analyst at Aberdeen Group, Inc. in Boston.

"Having access to this kind of information opens up whole new opportunities," said Tom Kucharvy, president of Summit Strategies in Boston.

"It is like an analytical tool. We are using the knowledge base to see what would happen if we were to make modifications" to certain business practices, Chavarria said.

His group is the biggest and earliest user of the data warehouse at the insurer. The customer information services center generates detailed financial reports and insurance usage and physician reports for more than 500 corporate clients. It sells 5,000 to 7,000 reports annually. Among other things, the reports detail how much corporations spend on their employees' health care.

Apart from this, Blue Cross uses the data warehouse to create confidential profiles of physicians that compare doctors' practices, including the cost and length of patient office visits. The information is so detailed that Blue Cross can, for example, track down mammography claims for a specific corporate client based on physician records.

"The thirst for information here has been astronomical. The more information we make available, the more there is a demand for it," Chavarria said.

Because of this, Blue Cross recently moved its 370G-byte data warehouse from an NCR Corp. DBC 1012 system to a two-node NCR WorldMark 5100M 32-processor, massively parallel system that runs Teradata Corp.'s database. The increasing demand on the data warehouse has also begun to strain staff resources and response times in some cases. The firm now prioritizes requests based on their importance, Chavarria said.

> **"It is like an analytical tool. We are using the knowledge base to see what would happen if we were to make modifications" to certain business practices.**
>
> *— Julio Chavarria, Blue Cross/Blue Shield of Illinois*

Blue Cross also provides easy-to-use report generation tools for some of its internal customers, including sales representatives, to provide direct access to information in the data repository. End users currently must go through the customer information center.

"We are going to be putting a lot more information in the hands of our end users. And the best part is they don't have to be technically proficient to access it," Chavarria said.

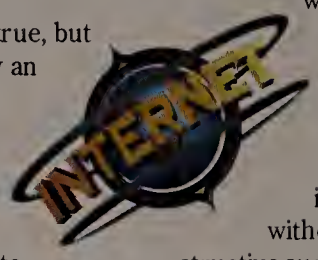
Blue Cross' data warehouse: Lessons learned

- ✚ Use a scalable data repository – add memory, processors and tools only as they become necessary
- ✚ Keep in constant contact with the people who actually use the data warehouse
- ✚ Try to put as many data access and report generating tools as possible in the hands of end users

'net collaboration

By Gary H. Anthes

A *Computerworld* reporter wrote this story as a quick-and-dirty draft, posted it to a journalism mailing list on the Internet and asked other writers to finish it for him.



Actually, that isn't true, but it is more or less how an information systems manager recently developed a security policy for the Bureau of Information Services in Augusta, Maine. The department provides networking, programming and other infrastructure-related services for all Maine state agencies.

Robert L. Witham Jr. late last month posted a query to the Network Security Assessment mailing list, a 3,000-name Internet list maintained by Internet Security Systems, Inc. in Atlanta.

In his short message, Witham explained he was developing policies for dial-in access and asked for suggestions. He outlined some ideas he already had, such as not letting modems answer until the fourth ring and terminating modem connections after three unsuccessful attempts to log on.

Within a week, Witham's posting had generated about 20 replies, and it stimulated a debate among some list subscribers about the best way to assign telephone number prefixes to foil hackers who use "war dialers."

The suggestions will be a great help in firming up the state's policy for dial-in access, Witham said. One good suggestion was to equip the modems with Caller ID and prohibit connections from anyone who had blocked Caller ID.

"Response was pretty good; I was surprised," Witham said. The only relatively worthless reply was from someone who faulted everything in the draft policy without offering any constructive suggestions.

Mixed opinion

Witham's approach to his problem has supporters and detractors.

"I have not heard of this being done, but it's a great idea," said Tim Sloane, director of messaging at Aberdeen Group, Inc. in Boston. The Internet offers access to "multiple editors, all with different perspectives and knowledge bases."

But Lance J. Hoffman, director of the Institute for Computer and Telecommunications Systems Policy at George Washington University in Washington, said there are drawbacks to the Internet-as-editor technique. The most obvious: When something is free, you often get what you pay for, particularly when it is from strangers.

Contact info

To subscribe to Network Security Assessment, send electronic-mail to majordomo@iss.net and, in the body of the message, put subscribe nsa [your E-mail address].

Hoffman said he had employed the technique but generally avoids it because it makes his work more public than he wishes it to be. "I don't want to be the recipient of unwanted queries that I'm not really ready to respond to," he said.

Hoffman said technology advances might one day make Witham's technique much more sophisticated. "Research papers on demand" might be generated by dispatching a software agent to poll selected experts. "It would synthesize what they put together and produce a report, possibly charging royalties," he explained.

Witham said he would definitely use the Internet polling technique again, perhaps to help perfect the state's antivirus policies. "People complain about things like flaming messages on the Internet, but there's a lot of good stuff out there, too," he said.

Witham said he hopes the security policy will be completed by the third quarter.

"We already have policies in place, but by the time you have something written and ready to go, technology has changed," Witham said. Then "you have to update your policies and procedures to match the latest vulnerabilities."

Briefs

Notes for Arco

Atlantic Richfield Co. (Arco) in Los Angeles selected Notes for its enterprisewide global messaging system. The system will replace five legacy messaging systems at the energy company.

Utility awards software contract

Systems & Computer Technology Corp. in Malvern, Pa., won a $6 million contract to provide utility software and services to **Westcoast Energy, Inc.** in Vancouver, British Columbia.

Teamwork

Unisys Corp. in Blue Bell, Pa., and **Broadway & Seymour, Inc.** in Charlotte, N.C., will provide payment processing software, hardware and related services to **Vermont Federal Bank** in Williston, Vt. Terms of the deal weren't disclosed.

Air data

Delta Air Lines signed a 10-year, $35 million contract for airway bill processing from Unisys' Egan, Minn., data center.

Bank opens video branch

Washington Mutual Bank in Seattle opened an automated branch to test consumers' responses to self-service transactions. Developed by NCR Corp.'s consulting group, the branch offers the same services as traditional full-service branches by using videoconferencing links between customers and bank representatives in the bank's call center. A two-way video call is initiated when customers touch the monitor. This allows them to conduct transactions such as opening a checking account.

Hospitals identify underpayments

Preferred Medical Marketing Corp. (PMMC) in Charlotte, N.C., has introduced software to help hospitals identify underpayments from managed-care companies. PMMC's Windows-based Contract Pro Version 2.0 and Contract Pro Simulator audit actual payments vs. expected reimbursements, identify outstanding balances and explain how reimbursements were calculated.

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Retail IS needs to get more for its dollar

By Robert L. Scheier
DALLAS

Retail IS managers face a tough future of rising expectations and flat budgets.

That's the bottom line of a recent study of 300 retail information systems executives. According to the poll, IS managers are being pushed to deliver expensive systems to analyze customer buying behavior even as they cope with budget woes and an increased threat of outsourcing.

"Many retailers are struggling today" because they focused on building more stores and offering a greater variety of products instead of learning how to generate more profits from the customers they already have, said Fred Crawford, managing director of consumer goods/retail practice at Computer Sciences Corp. (CSC) in Waltham, Mass.

CSC conducted the study, which was released recently, with *Retail Info Systems News* in Randolph, N.J.

The survey showed that, to remedy this, 56% of retailers expect to adopt executive information systems, 51% expect to implement document or workflow management and 50% expect to start using data warehouses. The retailers said they will do all this within the next three years. But only 45% of IS managers expect an increase in their budgets this year, a sharp drop from the 63% who expected a budget increase last year.

Various factors

The specter of outsourcing also hangs heavier, with 57% of the retailers outsourcing or planning to outsource some IS functions, compared with 47% last year.

The limits of current data warehouse and decision-support tools are also causing headaches for retail IS managers.

Ron Griffin, senior vice president and chief information officer at The Home Depot, Inc. in Atlanta, said decision-support systems need stronger links to operational systems such as those that generate orders or change pricing.

Without those links, Griffin said, decision-support users can become "data junkies who discover great stuff and don't ever do anything with it."

As decision-support systems and data warehouses become more strategic, they also must become more stable and reliable, said Joseph Smialowski, senior vice president and chief information officer at Sears, Roebuck and Co. in Hoffman Estates, Ill.

Sears is "leaning on our vendors very hard" to implement such mainframe-type robustness, he said.

Brief

Wells Fargo outsources

Wells Fargo Bank in San Francisco has outsourced its trust data processing activities, which represent $225 billion in assets and 75,000 accounts, to **SEI Corp.** in Wayne, Pa., under a five-year agreement. Terms of the agreement weren't disclosed.

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Managing

Sexism in IS won't go away. See Ms. MIS, page 84

RETHINKING THE

Return on investment requirements aren't bothering some CIOs. They've found better numbers

Do you hate doing ROI analyses? Then go find yourself some better numbers.

Sure, return on investment (ROI) analyses and cost-benefit calculations are useful tools for assessing information systems investments. But they can't measure an IS organization's overall effectiveness. We asked some IS executives how they measure their organizations' effectiveness, and we discovered techniques that transcend ROI.

RED MORGAN

▲ One form of measurement isn't enough, so Robert Tabb, vice president of IS at Ryder System in Miami, tracks his group's effectiveness with a four-part scorecard

Ryder's scorecard

"OUR TECHNOLOGY needs are infinite. We're always under pressure to make sure that our budget is being used effectively and productively," says Robert Tabb, vice president of IS at Ryder System, Inc. in Miami and chief information officer at its Ryder Commercial Leasing and Services division.

To track the effectiveness of IS activities at the fast-growing $5.2 billion truck-leasing giant, Tabb has devised a multifaceted scorecard that includes metrics, surveys and competitive analysis. Tabb says ROI analyses help signal a project's usefulness, but no single measure can sum up an IS organization's overall effectiveness. "We've discovered we must use a range of sources to get a comprehensive picture of how we're measuring up. ... There is no question that these internal and external measurements allow [IS] to be much more responsive," Tabb says.

Multiple measurements

These measures include the following:

- **Competitive intelligence.** Ryder's Strategic Intelligence Group gathers competitive information about rival leasing and transportation companies. The department tracks marketing, advertising and personnel trends within entire industries and specific companies. IS recently came under the group's scrutiny. "Now, analyses of competitive MIS initiatives are a formal part of the monthly report. It's a hot button," Tabb says.
- **Internal IS metrics.** Ryder performs monthly tracking of more than 100 such metrics. They include information about whether projects are delivered on time and on budget, function-point analyses for software development projects and percentage of time that systems are operational. Those measures are compiled in a monthly 55-plus-page report. Tabb uses it to compare current service levels with historical trends at Ryder and with industry-specific and external benchmarks from consultants and research houses.
- **Internal customer surveys.** Ryder's IS department conducts annual satisfaction surveys of internal users. "We're after both a general perception of [information technology] within each department at Ryder as well as specific suggestions on what needs to be improved," Tabb says.
- **External customer surveys.** Ryder surveys satisfaction levels of its largest external customers; a fourth of them are surveyed each quarter. These surveys focus mainly on business issues, but Tabb says much of the recent research has a technical component that IS finds valuable. Customers are asked about Ryder's reservations systems, billing capacities and responsiveness on maintenance, Tabb says. "All these areas tend to be very technology-dependent," he says.

Innovation at ITT

DAVID STARR, chief information officer at ITT Corp. in New York, has come up with a performance measure that encourages innovation. Starr says he doesn't want his managers to be satisfied with "easy ROIs" — technology projects that promise quick paybacks through cost-cutting. "I want my people to come up with ideas that actually generate revenue" for the company's many divisions, he says.

Streamlining PC and LAN support is good, but he says he wants projects that can literally earn 10 times the ROI of such improvements, such as enabling World Wide Web users to make reservations at ITT's Sheraton hotels.

But there are two hitches, according to Starr: Strategic IS projects "are much harder to prove up front." And IS teams that focus on cost-cutting look best in the short term, at least according to traditional ROI analyses.

Starr's answer to that? Besides conventional IS

NUMBERS

to help keep score of IS

By Alice LaPlante

benchmarking and ROI analyses, Starr tracks the percentage of time, effort and budget that the IS group in each ITT business unit devotes to revenue-generating activities. He holds quarterly meetings with the heads of all groups. He continually monitors projects to ensure they have the right balance of revenue-generating and cost-efficiency projects. If he finds that a group is placing too much emphasis on the latter, he prods its manager to take more risks and think more strategically.

Anthony Iorio, director of corporate telecommunications at ITT, says managers are expected to contain costs, and "we do an excellent job of it worldwide." But he warns, "If you get hung up worrying about ROI justification and cost-cutting alone, you're going to end up losing market share to the competition."

Iorio is especially enthusiastic about a plan to put an Internet box in Sheraton hotel rooms and to pursue other technology-based initiatives. He is also interested in coming up with innovative ways to cut ITT's risk on these ventures. For example, a partnership on the Internet box would pump up revenue if ITT were to pocket some of the fees collected from using the device.

"We hope this will entice more business travelers," Starr says. ITT is pushing ahead with the idea, he says. The boxes would let guests log on to corporate networks, retrieve and send electronic mail and faxes without having to haul around laptop computers. It's the kind of proposal Starr believes will surface more often, because he actively encourages projects that can bring in business.

Value without numbers

STILL, EVEN people with innovative measurement approaches sometimes need to forget numbers and steer by the seat of their pants.

Even though "it's notoriously difficult to measure the ROI of groupware," Tabb is plowing ahead with a $5 million investment in the "Ryder Office," a collection of applications that includes Lotus Notes for sharing information.

Starr says he can only guess how to cost-justify placing Internet boxes in hotel rooms. He says he doesn't think Sheraton can estimate how many additional guests those boxes will lure.

Even IS executives who run their IS organizations as profit centers agree that ROI isn't everything.

Matt Ghordjian, director of technology at Hennigan Mercer & Bennett, a law firm in Los Angeles with 100 employees, says he bills IS services to his firm's clients. But what's the dollar value of an imaging system that will let lawyers find information they never would have dug up otherwise? Ghordjian says he hasn't a clue. He calls such benefits "freebies" but says they are still valuable.

And value is the real bottom line for all three CIOs. ■

LaPlante is a freelance writer in Woodside, Calif.

Standing up to the bean counter

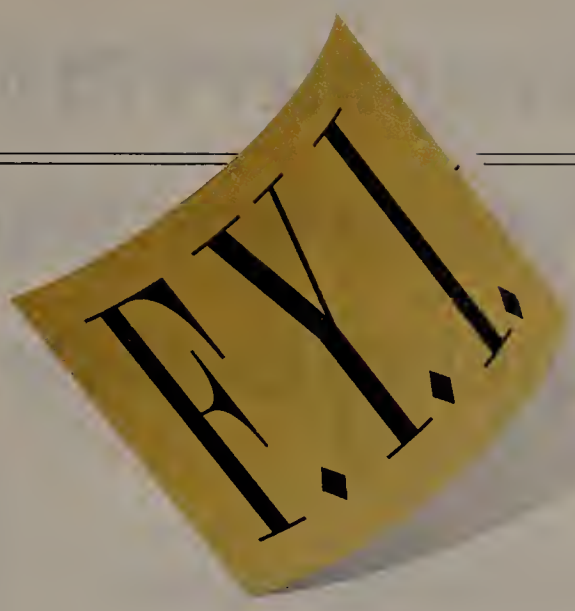
When you're asked for meaningless numbers, do the following:

- **Figure out what's really at issue when you're asked to justify IS activities; the question can be a symptom of deeper problems. Find out if management is asking that question of other parts of the company, says Michael Vitale, an IS measurement expert at the University of Melbourne, Australia.**

- **Don't think that unless a performance indicator can be measured, it's irrelevant. You'll miss many important performance indicators if you do, says Ann Senn, a partner at Deloitte & Touche in Minneapolis.**

- **Get input from other parts of the firm when you're devising ways to measure IS activities. It's important to align what you are measuring with what the rest of the enterprise thinks is critical, Senn says.**

- **Use numbers — even good ones — only as a preliminary diagnosis of possible problems. Always dig deeper, says Paul Strassmann, a consultant in New Canaan, Conn.**



Intranets: Will the price stay right?

Intranets aren't costing information systems organizations a lot of money to implement — at least not yet. But will the price of intranets go up as users try to use them for more critical and complicated tasks?

Market research firm Gartner Group, Inc. says yes. In a February research note, Gartner analysts said today's intranets are relatively simple platforms for publishing information that "face low performance, security, consistency and manageability requirements."

But as customers begin to use intranets for collaborative applications such as electronic mail, discussion groups, workflow and document management, Gartner analysts predict "higher risk and longer time frames" for intranet projects.

DAVID MARSHALL

Other analysts [See "Intranets: A thicket of hidden costs," CW, May 6] predict that users will spend more than they expected for intranet-related hardware upgrades, systems management and integration with legacy systems.

But some intranet managers say such fears are overblown. Eli Lilly and Co. in Indianapolis, for example, runs a 10,000-user worldwide intranet that is expected to grow to as many as 17,000 users by year's end.

The company also plans to use its intranet for the mission-critical tracking of records for government agencies and regulators, says Sheldon Ort, director of program management at the pharmaceutical giant's Information Technology Strategy and Planning unit.

But Ort says he doesn't expect a huge surge in intranet costs because Lilly already runs a lot of document management systems and will use intranets as "just the vehicle" to access those systems. As for other hidden costs, Ort estimated the intranet has added only 5% to 10% to the demand for network bandwidth and a similar load on its PC support burdens. "On the server side, we have had to add some capacity to our servers and disks," Ort says, "but again, it was very reasonable marginal growth." — *Robert L. Scheier*

& For more analysis of the costs and benefits of intranets, see *Computerworld Intranets*, a new minimagazine and online publication included in this issue.

Computerworld's IS Brand Preference Study on Application Development

Top Ranking Companies

3 GLs

Best Technology	Microsoft (Visual Basic)
Best Price/Performance	Microsoft (Visual Basic)
Best Service/Support	IBM (Cobol)
Best Documentation	Microsoft (Visual Basic)
Prefer To Do Business With	Microsoft (Visual Basic)

4GLs

Best Technology	Oracle (Developer 2000)
Best Price/Performance	Sybase/Powersoft (PowerBuilder)
Best Service/Support	Oracle (Developer 2000)
Best Documentation	Oracle (Developer 2000)
Prefer To Do Business With	Oracle (Developer 2000)

CASE

Best Technology	Oracle (Designer 2000)
Best Price/Performance	Oracle (Designer 2000)
Best Service/Support	Oracle (Designer 2000)
Best Documentation	Oracle (Designer 2000)
Prefer To Do Business With	Oracle (Designer 2000)

Configuration Management Tools

Best Technology	Microsoft (SQL Administrator)
Best Price/Performance	Microsoft (SQL Administrator)
Best Service/Support	IBM (AIX SDE Workbench/6000)
Best Documentation	Microsoft (SQL Administrator)
Prefer To Do Business With	Microsoft (SQL Administrator)

Database Management Systems (DBMS)

Best Technology	Oracle (Oracle 7 Series)
Best Price/Performance	Microsoft (Access)
Best Service/Support	IBM (DB/2)
Best Documentation	IBM (DB/2)
Prefer To Do Business With	IBM (DB/2)

Object Database Management Systems (ODBMS)

Best Technology	Hewlett-Packard
Best Price/Performance	Hewlett-Packard
Best Service/Support	Hewlett-Packard
Best Documentation	Hewlett-Packard
Prefer To Do Business With	Hewlett-Packard

Object-Oriented Analysis and Design Tools

Best Technology	Digital Equipment Corp.
Best Price/Performance	Digital Equipment Corp.
Best Service/Support	Digital Equipment Corp.
Best Documentation	Digital Equipment Corp.
Prefer To Do Business With	Digital Equipment Corp.

Object-Oriented Programming (OOP)

Best Technology	Microsoft
Best Price/Performance	Microsoft
Best Service/Support	IBM
Best Documentation	Microsoft
Prefer To Do Business With	Microsoft

The Computerworld IS Brand Preference Study Series periodically surveys Computerworld subscribers on brand preference in various major product areas. The Computerworld IS Brand Preference Study on Application Development was conducted by IDG Research Services and released in Spring 1996.

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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D, Tech. Mgmt.
60. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries?
(Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❑	❑
B. 10,000 –19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
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65. Communications Systems/Public Utilities/Transportation
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80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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A. 20,000 +	❑	❑
B. 10,000 –19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

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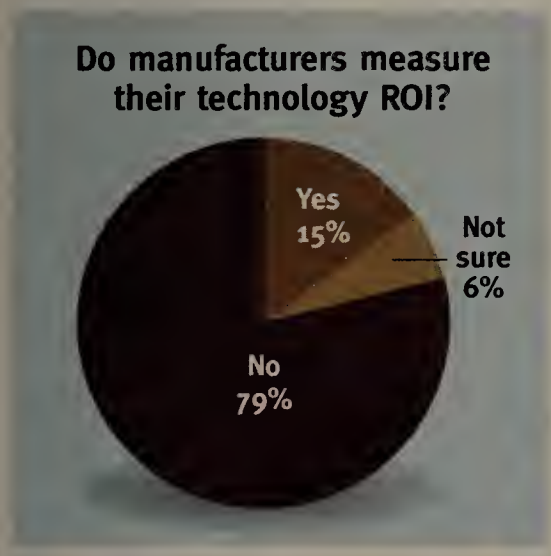
ROI who?

Do you like to spend lots of money on information technology, but don't want to be bothered with those pesky return on investment (ROI) assessments? Then work for a midsize manufacturer.

Only 15% of these companies have tried to measure the return of their information technology investments, according to a survey by Grant Thornton LLP, a national accounting and consulting firm in Chicago. The survey also found that midsize manufacturers boosted their IT spending an average of 23% between 1994 and 1995.

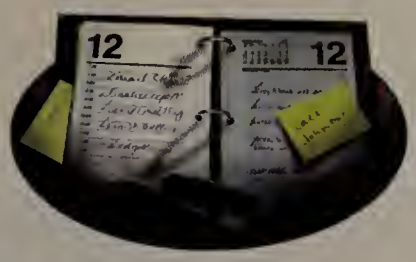
Manufacturing executives at 250 industrial firms with annual sales between $10 million and $500 million responded to the survey.



Source: Grant Thornton LLP

New SIM report

The Society for Information Management's (SIM) working group on Information Systems Process Architecture (ISPA) has released Version 2.0 of its ISPA report. The publication contains case studies and information about managing IS organizations from a process focus. Cost is $75 for members, $200 for nonmembers. Contact Laura Gramling at SIM headquarters in Chicago, (312) 664-6610.



August workshops

A list of workshops for IS managers. Some workshops are offered later in the year in other cities. To find the time and location most convenient for you, call the contact phone number.

Management Problems of the Technical Person in a Leadership Role. San Francisco, **Aug. 1**; Sacramento, Calif., **Aug. 1 and 2**; Corte Madera, Calif., **Aug. 2** — Contact: Fred Pryor Seminars, Shawnee Mission, Kan. (800) 255-6139.

Building Sound Intelligence Practices and Networks. Cambridge, Mass., **Aug. 1-2**; Arlington, Va., **Aug. 8-9** — Fee: $1,195. Contact: LKM Research, Inc., Northampton, Mass. (800) 511-5240.

How to Manage, Motivate and Coach Support Professionals. Chicago, **Aug. 5-6** — Fee: $595 to $695. Contact: Help Desk Institute, Colorado Springs, Colo. (800) 248-5667. Web address: www.HelpDeskInst.com.

Improving Your Internal Consulting Skills: For IS Professionals. Washington, **Aug. 5-7** — Fee: $1,295 to $1,490. Contact: American Management Association, New York, N.Y. (800) 262-9699.

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Sexism in IS: Not gone, not forgotten

WOMEN IN INFORMATION SYSTEMS

Ms. MIS

By Laura DiDio

"Our nation has had a long, unfortunate history of sex discrimination . . . which in practical effect put women not on a pedestal, but in a cage."

U.S. Supreme Court Justice William J. Brennan Jr., in the Frontierio v. Richardson case, 1973

Laura DiDio is *Computerworld*'s senior editor, local-area networks. She can be reached at laura_didio@cw.com

Sexism hasn't disappeared from the IS workplace in the 1990s. It's just more subtle.

"Sexism these days is like Baskin Robbins — 31 flavors, but sometimes hidden under whipped cream and toppings," says one veteran female information systems manager, who requested anonymity. Among the flavors, women in IS say, are tokenism, "the old boys' network," the "mommy track" as career derailment, exclusion from meetings and old-fashioned male chauvinism.

There are also tangible indicators of gender bias. Women's salaries in IS average $10,000 to $20,000 less than those of their male peers, according to a study by Magid Igbaria, professor of information science at Claremont Graduate School in Claremont, Calif. (see chart). Other IS research by Igbaria, published in the March 1995 issue of *MIS Quarterly,* indicates that women have fewer advancement opportunities and on average receive lower ratings on their job performance than men. "Women tend to be employed at lower levels of the organization, make less money and have greater intentions to leave," he says. But the salary gap between men and women is smaller in IS than in other professions.

'Deal with it, or get out'

Kim Clancy, an information dissemination program manager at the U.S. Department of the Treasury's Bureau of Public Debt in Parkersburg, W. Va., is an Air Force veteran and a pro at dealing with male chauvinism.

Clancy took college courses in computer studies while serving at Lakenheath U.S. Air Force Base in England in 1985-86. "I was the only woman in the department and basically had two choices: Deal with it, or get out," she says.

She says male colleagues openly challenged her credentials and routinely tried to overload her with work. When she said no, they called her, "difficult to deal with, argumentative and not a team player."

Clancy fought the sexism head-on. "If they tried to give me too much work, I brought in supporting documentation on why it couldn't be done and asked that they prioritize my tasks," she recalls.

Clancy encountered similar problems when she joined the Treasury's computer department. "I was ignored [and] excluded from meetings I clearly needed to attend. My male peers bypassed me. They . . . only spoke to me when they wanted a scapegoat." To the charge that she wasn't a team player, Clancy countered that the old boys' network wouldn't let her play on the team.

Things have gotten better in the past six months, she says. Treasury IS executives have responded positively each time she's brought a sexism-related issue to their attention. And the Bureau of Public Debt's IS management has instituted sensitivity training to deal with the old boys' network.

It's a step in the right direction, Clancy says, but the only way to really correct the problem is to remove the offending managers. "Sensitivity training can only do so much; it can't erase years of sexist conditioning," she explains. Clancy advises female IS managers to be prepared, to confront any issue with supporting facts and documents and to always stand your ground. If necessary, Clancy advises, lodge a complaint with the Equal Employment Opportunity Commission.

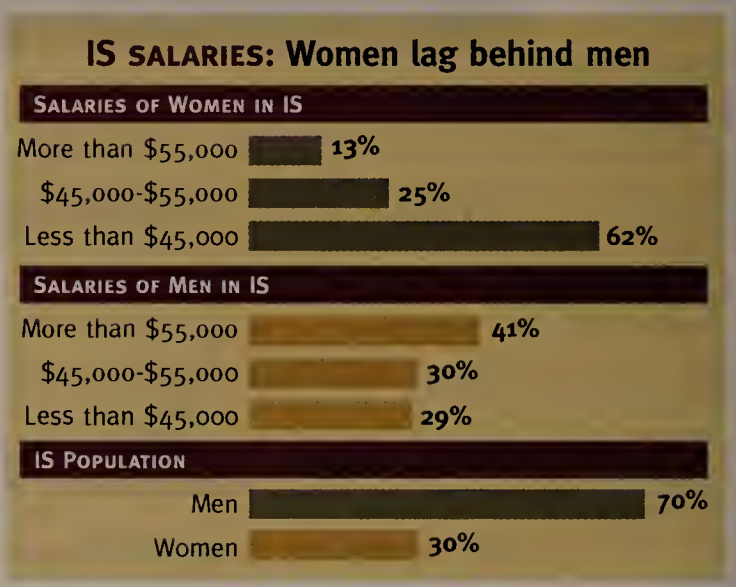
Subtle sexism also lingers when it comes to balancing family and work. Joann Ashman, chief information officer at Amdahl Corp. in Sunnyvale, Calif., says she was never the victim of blatant sexism and never found that being a woman was an "absolute obstacle" to advancement. Ashman has held IS and other positions at Johnson & Johnson and Apple Computer, Inc.

But Ashman nonetheless says progress for women remains slow. Most married female high-tech executives have working spouses, whereas few male high-tech executives do.

Even successful women in IS build their schedules around their families — especially when their children are in school, Ashman notes. "It's not the same for men. Women today are faced with how to juggle everything so we're still perceived as positive in the workplace."

Blatant sexual harassment is becoming more rare in American IS departments, it's still a fact of life in other countries.

Glenys Mercado, a systems administrator at Computerworld, Inc., says U.S.-style gender bias pales in comparison with the abuse heaped upon women IS managers in her native Venezuela. There, it's still common for male IS executives to proposition female IS subordinates, complete with lewd language and groping. Women who say no either find their advancement stopped cold or get fired. For example, a systems engineer friend of Mercado's declined a proposition from a department vice president and was given her walking papers a month later. "She had absolutely no recourse," Mercado says. ■



Source: 1995 survey of 86 female IS professionals and 268 male IS professionals by Magid Igbaria, professor of information science, Claremont Graduate School in Claremont, Calif. The IS population figures were first published in *MIS Quarterly*, March, 1995.

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Laura DiDio will lead a whiteboard discussion about sexism in IS on @Computerworld, at www.computerworld.com.

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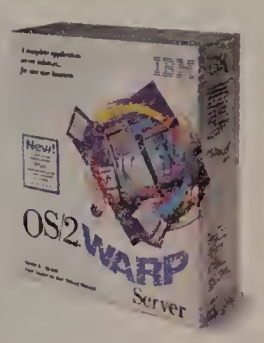

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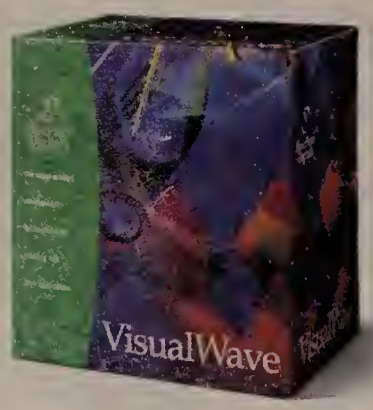

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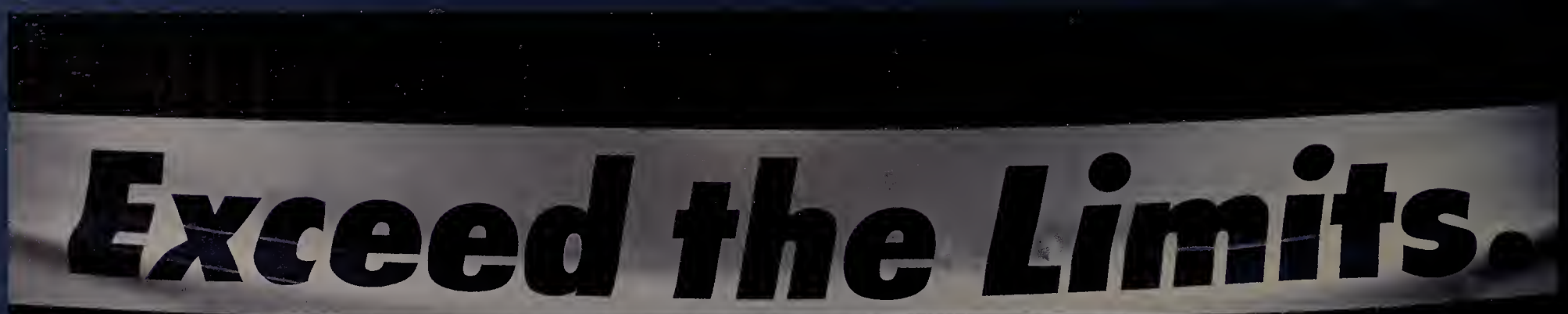

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Buyer's Guide

Real men don't use Web tools

Just kidding. But while advanced Web tools can offer advantages, a Computerworld survey reveals that most webmasters built their pages with basic editors and utilities.

By Lynda Radosevich

Sophisticated World Wide Web authoring tools aren't for everyone. In fact, fewer than half of the 442 webmasters who responded to a *Computerworld* survey say they use such tools. (The survey was conducted by First Market Research in Austin, Texas.) Advanced authoring tools' shortcomings, including limited support of Hypertext Markup Language (HTML) commands, difficult

Web tools, *page 92*

FIRING LINE

Novice and experienced webmasters say QuickSite from DeltaPoint is a tool worth learning.
See page 96

COMPUTERWORLD BUYER'S SATISFACTION SCORECARD

Webmasters like basic Web tools but say the advanced ones could stand improvement. **See page 93**

Want to get some Web tools real cheap — as in free? Turn to page 96, and find out how.

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Eye your browsers

Regardless of the Web authoring tool used, Web designers face a common challenge: designing sites that recognize the myriad of browsers.

"I've always catered to the lowest common denominator by making sure the site looks decent under all browsers," says Scott Smith, webmaster at JASC. Now he's shifting his strategy. Netscape Navigator and Microsoft Internet Explorer users account for 85% of the traffic at his site, so from here on, he's developing with those two browsers in mind, he says.

Smith isn't alone. In a survey of webmasters at 50 consumer-oriented sites, Forrester Research, Inc. in Cambridge, Mass., found that 14% of respondents target Netscape Navigator 2.0 and ignore less capable browsers; 48% build in compatibility for several key browsers; and 38% aim development at the least capable browsers.

"It's quite a load to keep up with changes, both in browser standards and in the dynamic nature of the documents," says Mark Troyer, graphics designer and webmaster at CICNet, Inc. in Ann Arbor, Mich. So Troyer says he targets Web pages to Netscape Navigator 2.0, which accounts for 70% of the traffic at his Web sites.

— Lynda Radosevich

Web tools

CONTINUED FROM PAGE 89

editing and cumbersome interfaces, make them more of a bother than a help, those users say. Rather, the developers prefer to type HTML tags themselves using text editors such as Microsoft Corp.'s Windows Notepad and Word Internet Assistant.

"I have not yet found a Web authoring tool I feel is worth using," says Dave Atkins, online projects director at Smart Valley, Inc. in Santa Clara, Calif. Some of the advanced packages throw in too many features and are difficult to use, he says.

The benefits

An advantage of sophisticated Web authoring tools is that they provide page designers with a shortcut by automatically inserting HTML codes into the appropriate places. HTML, the language for creating Web pages, works by tagging structural components of documents, such as titles, paragraphs, bullet lists and so on, so Web browsers know how to format the components on-screen.

Some users find that Web authoring tools help speed up and simplify the basic coding job. "I guess real men don't use HTML editors, but my business is turning as many Web sites around as possible, and anything that saves me time is good," says Ralph D'Andrea, proprietor at Advanced Internet Designs in Grand Junction, Colo.

There are dozens of Web authoring tools to choose from. Surprisingly, the most popular tool in *Computerworld*'s survey didn't come from a big-name vendor. Hot Dog Professional is a shareware authoring package from Sausage Software in Doncaster, Australia. Sausage Software also offers a $99 commercial version with more features. Both can be downloaded for a free trial from **www.sausage.com**.

Survey respondents say they like Hot Dog Professional's price, its support for Netscape Communications Corp. and Microsoft extensions, and its project management feature — which lets users store multiple Web pages from one project in one place. "It's simply the best," D'Andrea says.

Another popular product with respondents was Adobe Systems, Inc.'s PageMill. David Josephson, CEO of Informed Solutions, Inc., a Web design firm in Teaneck, N.J., says he likes PageMill because its WYSIWYG capability is better than the other packages. That means Josephson can see the effects of HTML code changes as he makes them.

CICNet, an Internet provider owned by the Big 10 universities, created its home page using low-end Unix text editor Visual Interface

Other Web tools that more than a handful of respondents mentioned include SoftQuad International, Inc.'s HotMetal Pro and Microsoft's FrontPage — formerly Vermeer FrontPage from Vermeer Technologies, Inc. (See chart on page 93 for contact information and comments from survey respondents.)

But even the fans of these authoring tools say they need work. For instance, Hot Dog Professional users say the newest version is loaded with too many memory-hogging features. Because of the feature bloat, D'Andrea says he's looking at HTML Edit Pro, a "really nice" shareware package from Internet Software Technologies at **www.ist.ca**.

In general, the webmasters who were surveyed say they want to see more robust Web authoring tool features. Frequently requested enhancements include support for forms, tables and image mapping, features that allow users to recreate missing links and repair broken links, Common Gateway Internet support, more HTML 2.0 and 3.0 tags, and WYSIWYG features.

Smart Valley's Dave Atkins opted to use a basic HTML tool to build the above home page

To fill in the functionality gaps, Web designers say they must use many packages at once. Scott Smith, webmaster at JASC, Inc., a graphics software company in Minnetonka, Minn., flips between two Web authoring tools — Hot Dog Professional and FrontPage. Smith says he likes FrontPage's WYSIWYG feature, which lets him preview and edit pages at the same time. But he still uses Hot Dog Professional because he is accustomed to it, and it has necessary features such as different color tags for specific browsers. Even after using several different tools, most Web authors say they still must get under the hood and write some HTML code by hand.

Nevertheless, users say these packages are a good value. It's easy to see why. Many are downloading shareware and test versions for free. Even the commercial packages are inexpensive and getting more so (see chart, page 96). Microsoft, for instance, in April lowered the price of FrontPage by several hundred dollars to $149 — $109 for Windows 95 users — and users may test a prerelease of the next version for free until the end of this month. Whether or not users pay, the ability to sample the software is popular. "I've been burned by commercial software before, so I like to try first before paying," D'Andrea says.

Bottom line

In the face of so many choices, how should a budding Web author begin to pick a tool?

"Choose the tool that best fits with your existing enterprise and your existing software," says Ted Julian, research manager of Internet commerce at International Data Group in Framingham, Mass.

While that may seem obvious, Web authors usually work in a vacuum. "The Web project often exists in Antarctica relative to the rest of your company; it has no links to anything else, and you're just building it from scratch," Julian says. "You then find that the information you need to make your Web site interesting, you don't own. It's in other parts of the organization. And the tools you've chosen make it difficult to access that information easily and quickly."

To avoid this dilemma, a company whose marketing and advertising information is done on a Macintosh with Adobe products, for instance, might stick with Adobe Web authoring tools. Or a company that has standardized on Windows 95 might choose tools from Microsoft or its partners, Julian says. ■

Radosevich is a freelance writer in Belmont, Mass.

What's to come?

Whither Netscape goes, others are sure to follow. So for a good idea of what's coming down the Web authoring-tools pike, download the latest test version of Netscape Navigator Gold 3.0 from **home.netscape.com**.

Navigator Gold is a combined Web browser and publishing tool. Version 3.0 includes several enhancements that respondents to a *Computerworld* survey say they'd like to see. For instance, most Web authoring programs require that you insert HTML commands in text mode. To see what the page looks like, you must then launch the file with a browser. Navigator Gold 3.0 offers WYSIWYG editing.

The software also helps Web authors implement proposed extensions to the HTML standards that aren't yet broadly supported including frames and table creation support, OLE objects, new audio and video streaming technologies, and advanced tools such as Java applets and JavaScript scripts. Navigator Gold can be configured to upload files to Internet service providers without a separate file transfer protocol (FTP) program or extensive FTP knowledge.

Be forewarned that this is a beta version, and bugs may persist. The final version is scheduled for release in the second half of the year. Pricing is expected to start at $79.

— Lynda Radosevich

COMPUTERWORLD BUYER'S SATISFACTION SCORECARD

Computerworld surveyed 442 webmasters by electronic mail to see how they created their World Wide Web pages. Some cited popular high-end tools such as Sausage Software's Hot Dog Professional and Adobe Systems, Inc.'s PageMill, but a surprising number said they used very low-end tools. Overall, users seem to be satisfied with their tools but would like them to be able to handle more complex pages.

OVERALL SATISFACTION
with Web authoring tools

A	B	C	D	E
46%	35%	15%	2%	2%
Very good	Good	Average	Poor	Very poor

USABILITY

A	B	C	D	E
53%	34%	10%	2%	1%

"Tricked-out Web editors just save you from typing. You still need to know what it is you're doing and the definitions."
William Herbert
Integrated computer services
Mays Landing, N.J.

"I find it's easier to use a text editor to make changes than a Web authoring tool."
Lennie Griffiths
CityNet Corp.
Charleston, W.Va.

DOCUMENTATION

A	B	C	D	E
33%	26%	24%	8%	8%

"There's not much there that isn't intuitive enough to get even a novice up and running without reading a page from the manual."
Mike Davis
ArtLink
Portland, Ore.

"Who uses documentation anyway?"
Bradley Hughes
Arrakis Internet Services
Sydney, Australia

MANAGING LINKS

A	B	C	D	E
37%	20%	19%	11%	13%

"Most of the other Web authoring tools that I have seen do not meet the needs of managing a large Web site."
Shawn Steele
Association of Brewers
Boulder, Colo.

"There is no need to have a program attempt to manage your links for you if you are a good HTML author."
Bryan S. Sampsel
Decision Science Applications
Colorado Springs

IMAGE MAP SUPPORT

A	B	C	D	E
30%	14%	21%	13%	22%

"They're easy to learn. It's just that the image can be fairly large, and our friends with slow modems complain. So, leave 'em out."
Richard Soos
Strong Opinions On Success
San Jose, Calif.

"We have trouble with some image maps and have to do the calculations manually."
Leslie Bonk
Brown and Martin
Waukesha, Wis.

BUILDING FORMS AND TABLES

A	B	C	D	E
37%	23%	17%	9%	14%

"They're a big help, but I still find myself spending time to get the desired effect."
Joe Rinehart
Config.sys Productions Ltd.
Config.sys International, Inc.
Kent, Ohio

"This is an area where it'd be nice to be able to drop a prebuilt empty table into a document, then tweak it by hand."
Harlan Harris
Wingra Technologies, Inc.
Madison, Wis.

SOURCE: First Market Research, Austin, Texas

TOOLS CITED BY THE WEBMASTERS

Web authoring tools
(in order of popularity)

Hot Dog Professional
Sausage Software
Doncaster, Australia
(714) 250-7262
www.sausage.com

PageMill
Adobe Systems, Inc.
Mountain View, Calif.
(800) 833-6687
www.adobe.com

HotMetal Pro
SoftQuad International, Inc.
Toronto
(416) 239-4801
www.softquad.com

FrontPage
Microsoft Corp.
Redmond, Wash.
(800) 426-9400
www.microsoft.com

Context Spider
InContext Systems
Toronto
(800) 263-0127
www.incontext.com

Other tools cited
(with Web authoring functions)

- HTML nonspecific tools
- Bare Bones Software, Inc.'s BBEdit
- Visual Interface, Unix text editor
- Windows Notepad
- Microsoft Word Internet Assistant

INTELLIGENT STORAGE HUB

FOR EVERYONE WHO'S BEEN WAITING PATIENTLY FOR FASTER NETWORK STORAGE.

HOW DOES 50% FASTER SOUND? Probably like a dream, at least to system administrators desperate for a smarter way to manage data. In that case, the Symbios Logic MetaStor SH4000 intelligent storage hub is a dream come true. It's a new storage system that attaches directly to your network and significantly increases throughput. Better still, it's from Symbios Logic, a leader in storage technology.

The solution to managing data across large networks isn't as simple as adding disks, or even buying a new server. Because general-purpose file servers are not optimized for centralized network storage. Our intelligent storage hub is. While storing up to 252 GB, it enables you to support more users and reduce response time. It eliminates bottlenecks, automatically backs up and restores, conserves network resources and controls costs.

How is all this possible? Simple. Everything about the MetaStor SH4000 intelligent storage hub is dedicated solely to worry-free storage. There's no excess code, no traditional speed bumps like virtual memory or application interfaces. It's all about I/Os and an astounding NFS Ops of 1,350. Again, up to 50% faster than general-purpose file servers. But the dream gets even better. Better because our intelligent storage hub also includes high-bandwidth RAID and industry-leading 99.99% data availability. Better because it's designed for easy expansion. And better because its integrated five-DLT-drive tape array means up to 400% faster backup.

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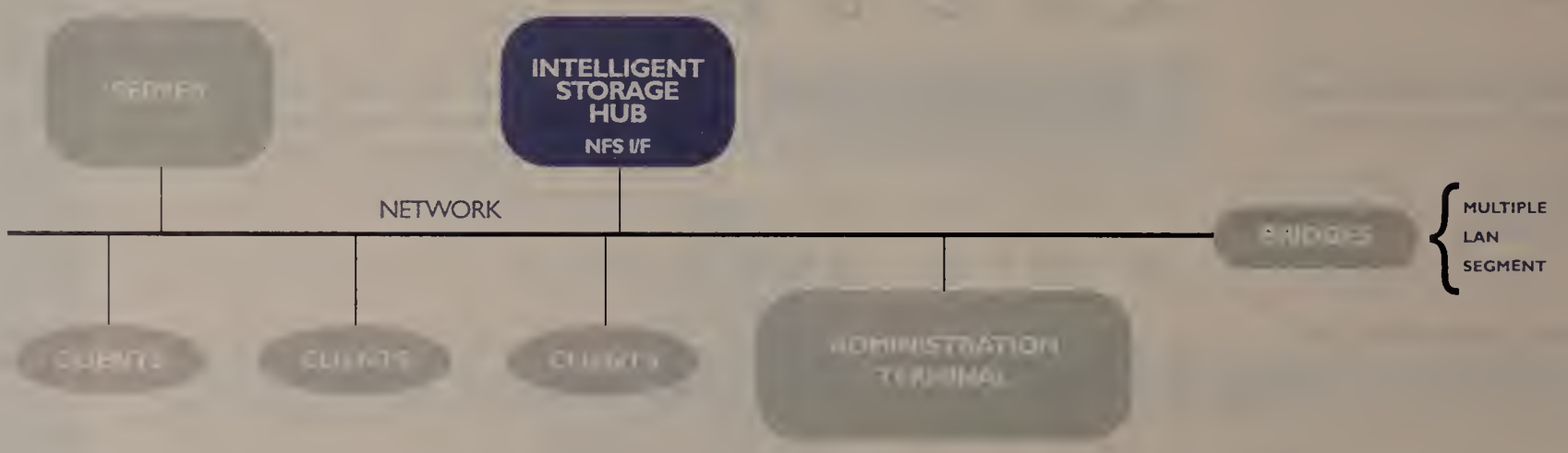

*The MetaStor intelligent storage hub attaches directly to your network, increasing data throughput by up to **50 percent.***

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SYMBIOS
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Cheap takes

Some professional Web developers prefer to pay retail for their Web authoring tools to ensure adequate support, but those on a budget will find that many good programs are available as shareware on the Web. Good sites to find HTML shareware include the following:

A continuously updated list of Internet-related shareware for Windows and corresponding reviews is available at **www.stroud.com.**

A list of HTML converters can be found at **www.w3.org/pub/WWW/Tools/Filters.html.**

For other lists, search for "HTML converters" and "HTML editors" in Yahoo or Alta Vista.

Also, if you would like reference materials on how to create a Web site, turn to our Marketplace section.

Coming soon:
A review of **Windows NT-based Internet firewalls** leads our Aug. 12 Buyer's Guide. Contact senior editor Cathleen Gagne at cathy_gagne@cw.com if you're using a firewall tool and would like to share any implementation issues with your peers. This week, we will be conducting a QuickPoll on @Computerworld. If you would like to participate, go to www.computerworld.com.

FIRING LINE

QuickSite accommodates all skill levels

By Kevin Burden

Not everyone is ready to build World Wide Web sites with just a text editor — some need a little assistance.

QuickSite from DeltaPoint, Inc. in Monterey, Calif., is a Web authoring tool for various skill levels, from users with no Hypertext Markup Language (HTML) experience to seasoned webmasters who prefer to write their own code, say the four users we interviewed.

QuickSite's database management system differentiates it from other tools — such as Microsoft Corp.'s FrontPage and Adobe Systems, Inc.'s PageMill — that use a page-oriented approach. The entire contents of a QuickSite site are displayed on an interactive grid (see photo below), which users named as one of its best features.

"[QuickSite] lets you concentrate on content rather than appearance," says former HTML novice Chris Welch, president of Hummingbird Systems, a software development firm in Sterling, Va.

But users can also build custom pages and advanced interactive elements such as forms and tables, says webmaster Miguel Rodriques, systems engineer at Museu Municipal do Funchal (**www.mmf.uma.pt**), a natural history museum in Madeira Island, Portugal.

The other users interviewed were Bob Horn, president of Automated Support Services (**www.concentric.net/~lasereye/assi/assi.shtml**), a computer training and support consultancy in Largo, Fla., and Marc Lussier, an engineer at Appvision Software (**www.appvision.com**), a software development company in Redwood City, Calif.

- Hummingbird Systems, Sterling, Va.
- Museu Municipal do Funchal, Portugal
- Automated Support Services, Largo, Fla.
- Appvision Software, Redwood City, Calif.

Interface

B B B+ B-

There are plenty of prompts and tools in QuickSite's interface to make home page development relatively easy, users say. Wizards help novice users through initial hurdles such as site design and structure. "[QuickSite] gives you a great first experience when creating a Web page," Horn says.

Novice and experienced users alike praised QuickSite's outline view of a Web site's contents. "It's easy to follow the site's hierarchy, view the relationships and see where all the text and graphics are," Welch says. He adds that the view is familiar to anyone with a database background.

Coding flexibility also won points from evaluators. Users can either select HTML code from a pull-down menu or write their own. QuickSite also hides the HTML code for a clean look that is popular with novice users, while permitting access to the tags for experienced users.

However, it isn't a WYSIWYG interface. Users can't edit and preview pages simultaneously like with competing products such as PageMill. But evaluators say WYSIWYG capabilities become less important as developers refine their skills.

Usability

A B B A

Welch says he awarded an "A" because "QuickSite is packed with features, but they are laid out in a way that doesn't overpower you." Menus and various tool bars contain "most of the features you need or just want, but it's not confusing," he says.

QuickSite's most valuable feature, users say, is how its database organizes the information structure. "It would be nearly impossible to manage a site with hundreds of continually changing pages without a database," Rodriques says.

The database also provides a library for QuickSite objects that users can add to by writing code or downloading elements for other Web sites. The Internet provides the code requisitioning ability, but QuickSite provides the great cataloging device, according to users.

Functionality

B A A A

QuickSite supports HTML 3.0 tags, which users felt was important, even if they often defaulted to the more widely used 2.0 tags. "I'm not going to spend time on fancy new tags until I know a lot of people can see them," Horn says. QuickSite reportedly also lets users write JavaScript directly into its page designer templates, although none of the evaluators had tested the compatibility.

But QuickSite doesn't let users add custom tags to the system. "If someone wants to type some code, they should be able to add to QuickSite, in much the same way WebThing (**www.arachnoid.com/webthing/**) lets you," Horn says (see vendor response below).

A built-in table editor and menu prompts make "table- and form-building very straightforward," Welch says. Image maps aren't supported, although Welch plugged in an external shareware program called MapDisks that did the job.

QuickSite has extensive capabilities to create and manage links, according to the evaluators.

Value

B A A A+

QuickSite's $70 price didn't guarantee it would receive high grades for value. "[QuickSite] had to be worth my time," says Rodriques, who gave it an A. Evaluators unanimously say QuickSite delivered what it promised: plenty of design assistance and wizardry that let users without HTML code experience point and click a Web site into existence. At the same time, QuickSite offers experienced webmasters the advanced functions they want, including HTML 3.0 with automatic tagging, a table editor and an open application programming interface. ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line.

DeltaPoint responds

QuickSite gives an outline view of a site's contents

Custom tags
In a new QuickSite release due this year, the company plans to include a feature to let users add custom tags to the system.

Link status
QuickSite will automatically relink internal links but not external ones. DeltaPoint recommends that users import Netscape Communications Corp. Navigator bookmarks for external links.

WYSIWYG
The company plans to add WYSIWYG capabilities to the interface, but it didn't indicate when.

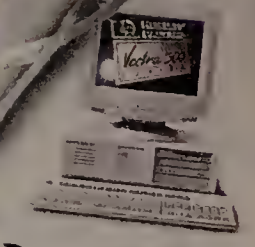
ADVANCESTACK
HUBS AND SWITCHES

Router 210. Connectivity to remote site

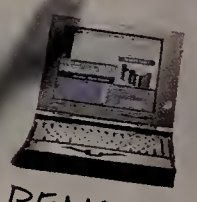
SNMP. Intelligent network monitoring and performance optimization

Dial-A-LAN. Dial-in/Dial-out remote access

HUB MODULES



REMOTE PC



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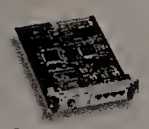
100VG. High-performance, multimedia and time-sensitive apps

100Base-T. High-performance switch to switch or switch to server. Coming soon



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FDDI. High-speed connectivity

CISCO. Future router integration

ATM. Coming soon

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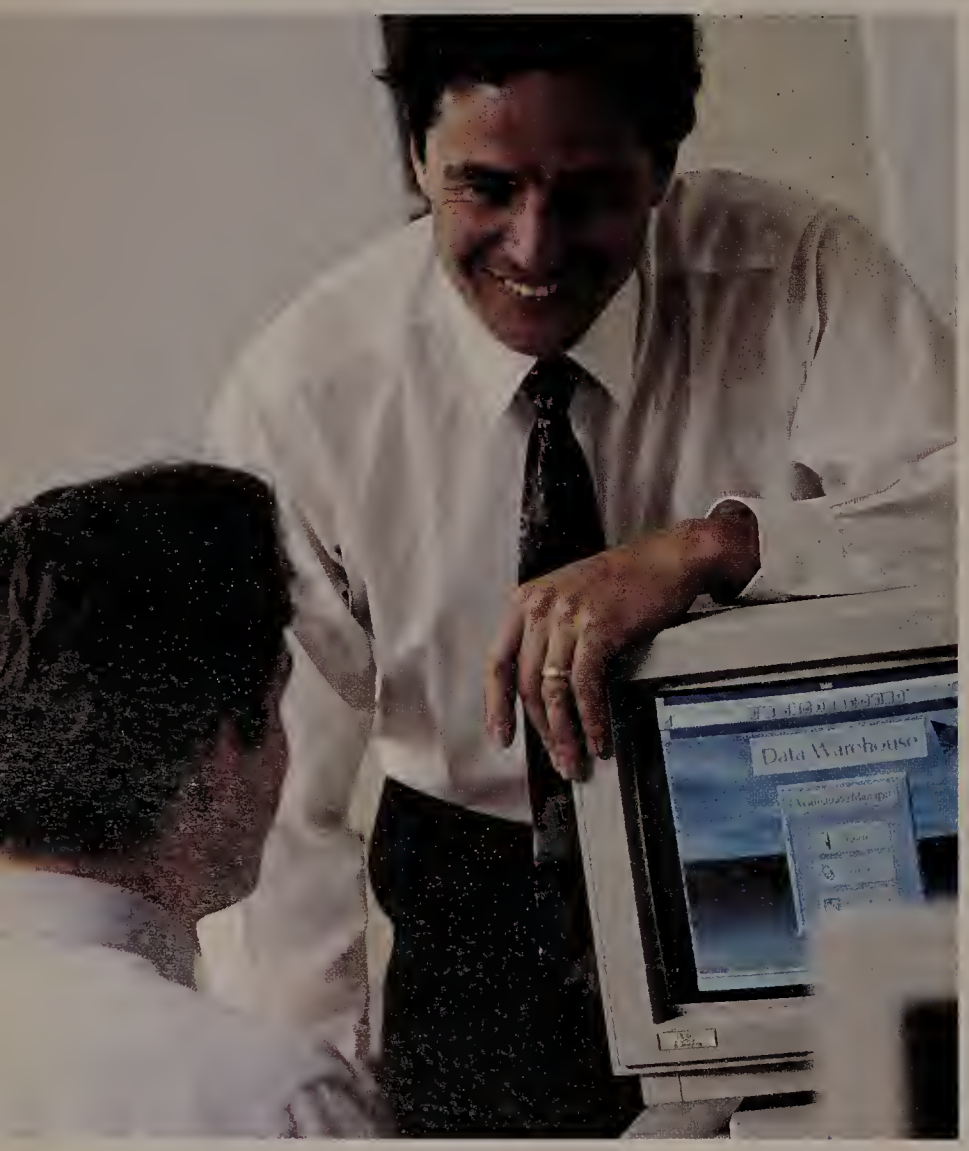

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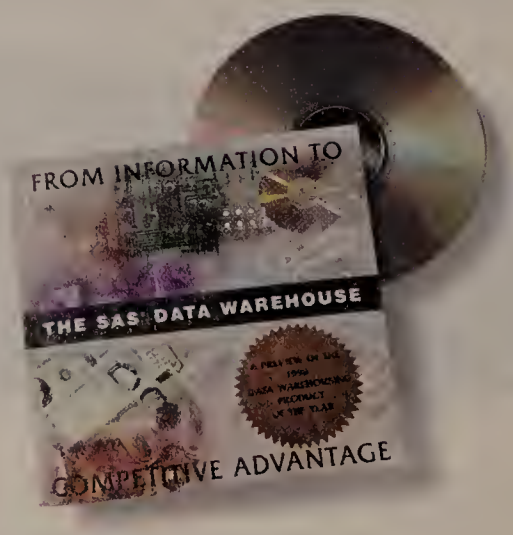

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In Depth

WEB 101

BY LESLIE GOFF

Like their corporate counterparts, the Sachem High Webslingers spend their days managing projects, designing online applications and re-engineering work processes. If only somebody could do something about gym class . . .

he bell rings and the halls of Sachem High School North swell with 2,500 11th- and 12th-graders changing classes. It's late in the school year; kids at this Long Island, N.Y., school talk about the prom, the dreaded State Regents' Exams and camping out to buy tickets for this summer's Alanis Morissette concert.

One student's mind is elsewhere, however. As he hustles down the hall, he keeps an eye out for his pals to talk about a club meeting for that afternoon. His main concern, besides making it to trig on time, is getting the Hypertext Markup Language (HTML) links and graphics he needs for a new page at the Sachem Web site.

Web 101, *page 100*

Left to right: Mike Ferraro, Bruce Howe, Vinny Pasceri Jr., Aaron Foss, Mike Pomara, Phil Nachreiner and Jennifer Grackin

Brian Smale

WEB 101

CONTINUED FROM PAGE 99

Meet Vinny Pasceri Jr., high school webmaster. His days, except for the pop quizzes and the homework, are not unlike those of a corporate webmaster. Pasceri's the kind of high school kid who does it all and makes it look easy. He prides himself on the fact that he has never owned a Nintendo system, cutting his teeth instead on his father's old 386SX. When he's not in class or practicing violin for Sachem's chamber orchestra, Pasceri's managing projects, designing online applications and re-engineering the school's day-to-day work processes.

As the driving force of a club called the Webslingers, Pasceri oversaw the creation of a high school Web site that has succeeded in areas that too many corporate Web sites ignore. The resources within the site are connected to the school's internal processes. Slowly, the site is changing the way students, teachers and parents interact. It simultaneously promotes and furthers Sachem's overall mission.

"I wanted the site to be an interactive service," Pasceri says, sounding like a kid in his inflection, a professional in his choice of words. "I looked at a lot of other high school sites, and all they had was the basic stuff about their school. In Webslingers, we started thinking about what teachers could use the site for, what students could use it for. We redesigned it three times."

At the Sachem Web site (www.sachem.edu/), the Homework Network enables teachers to post — and students to access — homework assignments for the upcoming weeks. The Online Writing Lab — a common feature at university sites, but not among high schools — connects students to peer counselors for writing assistance.

An electronic-mail address locator eliminates a potential barrier to a student asking for a teacher's help. For students deciding whether to brown-bag it, even the lunch menu is online.

"I wish I could take credit for this, but these kids have done it all," says Mike Pomara, technology director for the Sachem School District in Lake Ronkonkoma, N.Y. Sachem Online, which has served as a model for other school districts, looks great, complete with very cool moving text. By May, the site had generated more than 1 million hits.

"I don't see this as merely an Internet site, but evolving into an intranet where students can use online class materials, study aids and supplemental material that relates to class lectures," says Frank Scricco, Sachem's Italian teacher, who joined the club last fall.

"You have to use what you know."
— Dr. Scricco, Italian class

At lunch, Pasceri dashes through the cafeteria line for a burger, fries and cookie, then bounds off to the Internet lab. Like his counterparts in the corporate world, he manages to gulp down a few bites intermittently. In between, he confers with Webslinger Aaron Foss, runs to the graphics lab for a floppy and calls Intelligent Computer Solutions (ICS), the local systems integrator and Internet service provider that supports Sachem's server.

Pomara met Pasceri last summer while researching ways to garner community support for a technology referendum. Pasceri was putting in his second summer at ICS. He was learning HTML and already developing a Sachem Web page. When they met, each saw an opportunity.

"Vinny was just this little ball of energy," Pomara recalls. "I decided there is a God when he said he was in my district. He's a prodigy."

That first one-page implementation of Sachem's Web site was "really lame," Pasceri says.

When requests for more content rolled in, he gathered some friends and acquaintances — Mike Ferraro; Phil Nachreiner, whom Pasceri had known from Boy Scouts; Foss; and

BRIAN SMALE

AN ADVISOR AT LAST. Bruce Howe, an electronics teacher at Sachem North, volunteered to sponsor the Webslingers in January. Before that, the club lacked official school sanction despite its popularity.

Sachem literary magazine editor Jennifer Grackin — to form the Webslingers executive committee. What they went through to establish their club is a lesson in corporate politics.

They called themselves the Webslingers after briefly considering the NetHogs (Spiderman beat out *Welcome Back, Kotter*). By their first meeting, the executive committee members had trained one another in HTML, Unix and Adobe Systems, Inc.'s Photoshop, sharing skills and developing a curriculum for the club.

On an early October afternoon, the committee lined up rows of chairs in a classroom and prepared for the club's debut. Pasceri had posted signs urging kids to "Be a Webslinger" but expected only a handful to show.

Instead, more than 250 students crammed into the room. The district's superintendent, James Ruck, who attended the meeting with Pomara, "nearly had a heart attack when he saw that," Pasceri says.

"The room was packed, and hot and humid," he adds. "Everyone was all sweaty, and it was really loud. I had to yell at the top of my lungs, and people were shouting questions left and right. I had never seen such enthusiasm in people before. We had had other computer clubs, and they always attracted the real math types. But here we had all kinds of kids — popular kids, kids into art, writers. I couldn't believe the potential."

$ax^2 + bx^2 + c = 0$
— On the blackboard, Mr. Canjero's trig class

Despite the overwhelming response of students, the Webslingers couldn't recruit a teacher to act as official adviser. Without an adviser, the school would neither sanction the club nor support it financially.

"Most of our teachers have 20 years' experience," Pomara says. "How do you turn them on to technology?"

Things reached a head when school administrators busted the club's holiday party — a wild to-do that involved five pizzas and a video, Pasceri confesses — because a teacher wasn't present.

"They made us have the party in a little room off the faculty lounge so that whoever was grading papers could stick their nose in once in a while," Pasceri says. "That was a bit hard to take."

It stung because, by that time, the Webslingers were already functioning like a corporate online services department. The executive committee had posted the second version of the site.

Moreover, it had organized project teams into four divisional areas

Web 101, *page 102*

How I spent my summer vacation

Now that you've met Vinny Pasceri Jr., high school webmaster, meet young Mr. Pasceri, high-tech entrepreneur.

Sachem Online's Homework Network, which Pasceri designed using Perl — a Unix tool — is so successful that neighboring schools have asked where they can purchase it. With the blessing of Mike Pomara, technology director at the Sachem School District, Pasceri has partnered with ICS to sell the program to educational customers.

ICS, where Pasceri has worked several summers, has given him 3% stock ownership and will pay him residuals on the sales. It also named him assistant director.

"I wanted to sell it on my own, but I don't have the experience or the time," Pasceri says. "I'm hoping I'll be able to earn some decent money for college."

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WEB 101

CONTINUED FROM PAGE 100

— HTML, layout and graphics, content and editing, and publicity — and was managing page development. Pasceri was handling management and administration, coordinating the requests and queries from teachers and administrators with the efforts of the teams.

"We could have been providing such a service to them, and they're like, 'Look kids, have your party here in the broom closet,'" Foss says. "That was discouraging. Everyone who saw the pages loved them, and those who didn't just thought we were snot-nosed kids."

The Webslingers persisted.

Throughout the year, they championed their cause by producing a high-quality product, maintaining excellent customer service and, ultimately, winning the respect of key figures in the school and the district. Bruce Howe, Sachem's electronics teacher, volunteered to advise them in January. And by last month, the club that started out as the poor stepchild had become the belle of the ball.

Pomara says, "If it's true that success has many fathers, then these kids have the biggest family around. If anyone had told me a year ago where we'd be now, I'd never have believed them."

"The more things heat up, the more the pressure builds."
— Mr. Healey, chemistry class

The last bell of the day rings, and a tide of students slams through the school's front doors. But not everyone is headed home: The Internet lab begins to fill, and within a few minutes, not a single workstation is available. The Webslingers are working on the final pages to be posted before summer vacation.

Webslinger Sue LaMorte, who's designing an online playbill for a Sachem production of *South Pacific*, complete with cast photos and biographies, complains to Pasceri that the drama department wouldn't give her a floppy disk with all the information on it, even though one was available. She's rekeying everything from hard copy. Pasceri rolls his eyes. Despite the Webslingers' newfound acceptance, he knows he has his work cut out for him.

"Next year, we will be organized differently," he says.

He and the other returning members of the executive committee are struggling with the challenges of managed growth by redesigning workflow, reorganizing responsibilities and applying new software tools to increase productivity and improve quality.

"The structure with the four groups isn't working out," he says.

BRIAN SMALE

FUTURE'S SO BRIGHT. As webmaster at the Sachem site, Vinny Pasceri Jr. encounters frustrated colleagues, catch-as-catch-can lunches, delicate meetings with upper management and a constant quest for more funding. How different is his day from yours?

"Someone is always waiting on someone else to finish their piece of the project. So we're going to train everyone in Microsoft FrontPage, which lets you create pages without knowing HTML, and we'll hand over entire projects to each individual: 'Here's the bowling team. You have two weeks.'"

Finally, at 3 p.m., Pasceri has to throw the Webslingers out of the lab. He has to head home, finish his homework and make dinner.

The next day, he's scheduled to attend a breakfast with Miss America, an opportunity that has come his way because of the Webslingers.

"I hope I get her autograph," he says. It surprises no one when he does. ■

Goff is a freelance writer in New York.

CLUBS AND ACTIVITIES

The Webslinger executive committee

Jennifer Grackin
Editor in chief
Junior

FIRST COMPUTER USED: "A Commodore PET, when I was 1 or 2. We have a picture of me in front of it. What I remember first is writing a letter to my pen pal on another old Commodore when I was about 7."

WHAT I WANT TO BE WHEN I GROW UP: "I'm interested in nuclear medicine, but I'm not exactly sure. I still have four years of college ahead of me."

WHAT I LIKE BEST ABOUT WEBSLINGERS: "The fact that we get so much respect from the teachers. They're so impressed with us."

WHAT I LIKE LEAST ABOUT WEBSLINGERS: "We have some group problems — sometimes we don't work well together on the committee. But it was only our first year, and I'm sure we'll work them out. And I'd like to see more girls in the club."

Aaron Foss
Vice president, HTML
Graduating senior

FIRST COMPUTER USED: "My parents gave me an Apple IIGS when I was 10."

WHAT I WANT TO BE WHEN I GROW UP: "Independently wealthy — does that count? I'm looking at IS, the information superhighway. I manage a network now for an accounting firm, and it's a little too small for me. I want to be in the Fortune 500."

WHAT I LIKE BEST ABOUT WEBSLINGERS: "I loved running my group — learning how to manage people and thinking about how to treat people, thinking about things from their point of view."

WHAT I LIKE LEAST ABOUT WEBSLINGERS: "It became discouraging when teachers and administrators wouldn't cooperate with us. At first, it was a constant battle."

Phil Nachreiner
Director of layout and corporate sponsorships
junior

FIRST COMPUTER USED: "My friend's 286, six years ago. We thought PC Tools was the coolest thing. We had no idea what we were doing, but we played around with that forever."

WHAT I WANT TO BE WHEN I GROW UP: "I want to work for a major computer firm and then start my own software or hardware manufacturing business. It will depend on where the market is then."

WHAT I LIKE BEST ABOUT WEBSLINGERS: "It brings together a lot of people with different talents. The work brings out the best in all of us."

WHAT I LIKE LEAST ABOUT WEBSLINGERS: "Sometimes it's hard to keep things organized and together. A lot of people are involved, and it gets hectic. We're changing our ideas about how we run things."

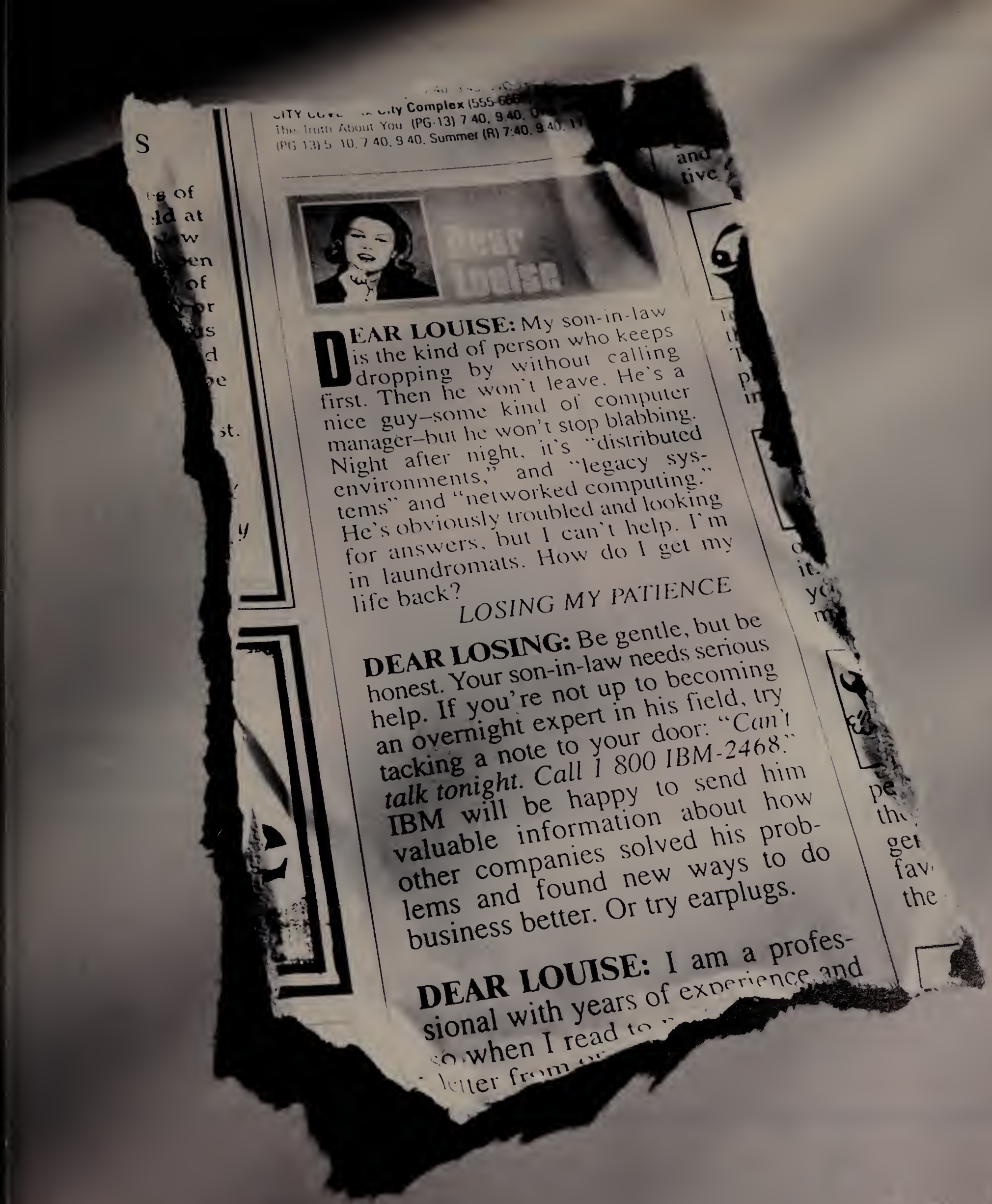
Mike Ferraro
Director of publicity
Junior

FIRST COMPUTER USED: "An Atari. I played games and started programming in Basic."

WHAT I WANT TO BE WHEN I GROW UP: "CEO of a large computer firm. But more likely, I'll be a programming consultant."

WHAT I LIKE BEST ABOUT WEBSLINGERS: "That we all get together and create a useful product on the Internet and that we represent the district in a technologically advanced way."

WHAT I LIKE LEAST ABOUT WEBSLINGERS: "The limitations, such as the facilities and the accessibility to the computer labs."



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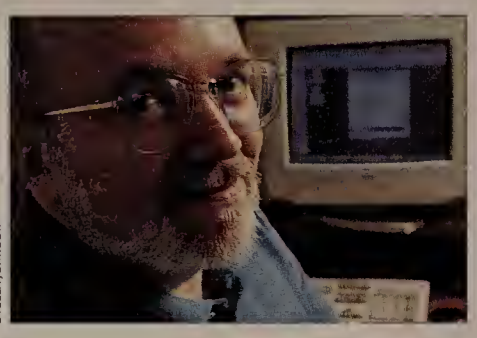
By Alan R. Earls


STELLA JOHNSON

Meet Bob Avallone: computer professional, family man, movie buff. He's well-adjusted to being in his 50s and increasingly well-adjusted to life as an IS "temp."

A victim of downsizing, Bob Avallone originally hoped the move would be only a "temporary situation," but now it has become a welcome way of life. His assignments usually last a year or more. There is always change on the horizon, and there are opportunities to acquire new skills. Avallone says temporary workers have more security than most permanent employees. And if they play their cards right, they can have career growth, too.

YEAR 1: Fear and uncertainty

☞ Avallone recalls his first year of temping too well. His new life began in 1988 when his employer folded unexpectedly. Life suddenly became *real* interesting, unpredictable and scary.

Avallone initially looked for a full-time position. With more than a decade of information systems experience, he had been immersed in a VAX environment. He had used Cobol, Data Control Language, Datatrieve, Record Management System and CA-Ingres from Computer Associates International, Inc. as a project leader, systems analyst and programmer. His focus was on implementing an online customer and account transaction processing system. He talked up his skills with recruiters and quickly landed a "short-term" assignment at a large manufacturer.

YEAR 2: Solid ground

☞ Short-term turned out to be long-term as the manufacturer found more work for Avallone. And temping doesn't seem so temporary either; most temps are treated as part of the team, Avallone says. "A few of the permanent people ignore you, either because they think you won't be around for long or because they are jealous of what they think you are being paid," he says.

YEAR 3: "I can dance!"

☞ Avallone's contract assignments were extended and expanded. But Avallone says he could see the work beginning to peter out at the manufacturing firm. He got the word out to recruiters with whom he stayed in closest contact. His VAX skills quickly landed him an assignment at a financial services company. The expected duration was three months. Then, "another contractor quit, so they asked me to stay on," Avallone says. Over time, the three-month contract kept getting renewed.

YEAR 4: Not just a job, an adventure

☞ Still at the financial services giant, Avallone learned to be entrepreneurial. "There is an unwritten understanding when you take a temp assignment that they will come up with 40 hours of work for you each week. Because I hate having nothing to do, I looked for extra things that needed doing and got permission to work on them when other things were slower," he recalls. That gave Avallone an opportunity to learn newer technologies. "I started to seem indispensable," he says.

YEAR 5: "I'm a business!"

☞ "I probably could have stayed forever" at the financial services company, Avallone says. But he needed experience with newer technologies to stay viable as a temp. So he decided to leave even though he had nothing else lined up. He contacted numerous recruiters and employment agencies, but no positions turned up for several weeks.

Avallone worried that his lack of skills might be the problem, so Avallone signed up for an eight-month certificate program at a local university. Here he gained client/server skills and exposure to Microsoft Corp.'s Visual Basic and a family of database tools from Sybase, Inc.

YEAR 6: Is there a future in this?

☞ Avallone was still finishing the certificate program when he got a call from his previous manufacturing employer and an opportunity to live off of the VAX environment for a while longer. Then, six weeks after signing on, funding for the project was dropped.

But Avallone had stayed in touch with his network of recruiters. That helped him quickly land a job at a consulting firm that was converting "flat" VAX database files into a relational database for a biotechnology firm. In his five months there, Avallone immersed himself in Unix and an Oracle relational database management system.

YEAR 7: Retooling

☞ The manufacturer begged Avallone to return. Despite his reluctance, the promise of a chance to work with Visual Basic finally enticed Avallone. He also finished the certificate program.

YEAR 8: Old dog, new tricks

☞ Avallone now finds he is in demand again. He can even do some work from his office at home. And he stays active in a leadership role within the Independent Computer Consultants Association.

Avallone has also learned to be careful with his income to carry him through the slow periods. He didn't disclose his income but says he has a "comfortable" lifestyle and expects "significant salary growth."

"I think people are more willing to consider temps as part of the normal landscape. [And] if you don't aspire to management, it is a good career," Avallone says. ■

Earls is a freelance writer in Franklin, Mass.

Regional Scope: Connecticut

EXPERIENCE required

Connecticut offers all the beauty and benefits of New England, but only the best in IS can expect to find jobs

By Melanie Menagh

Wedged between New York and Boston, Connecticut has been riding an economic roller coaster. Restructuring has rocked the insurance titans in Hartford. The embattled defense industry to the south — around New Haven — is retrenching. Only Stamford, with its broad base of businesses, has weathered the storm relatively well.

"In general, the Connecticut economy is sluggish, if not depressed," says Helen Keating, recruiting manager for information systems at Robert Half International, Inc., an employment firm in Hartford. "But people with average and above-average skills in IS operate in their own economy. As soon as good IS people are out on the job market, they're snapped up."

Linda Streett, recruiting manager at Andersen Consulting in Hartford, echoes Keating's bullish outlook. "As we speak, we're looking for people to join us — at the start-up level all the way through people with 10 years on the job. Companies are looking for people with a number of years of experience with a variety of skills. Industry knowledge is a plus but not required."

stamford

Stamford is a business center that's just a quick hop from New York on Interstate 95. It is also next door to the estates of Fairfield County, one of the nation's Top 10 ritziest places to live. Many industries dot the landscape, which gives the city a solid, dynamic business base.

"We're a stable economy, not so dependent on any single industry," says Terrence Walker, director of planning and IS at Pitney Bowes, Inc. "We also have a lot of corporate headquarters — it's a primary trait of Stamford — and those guys need a lot of IS support staff at all levels."

Michael Rooney, director of MIS at Norelco Consumer Products Co., says the company has had openings for workers who have experience with mainframes, LANs and Microsoft Corp.'s Visual Basic. "In general, business is pretty good. Often, there are more IS opportunities than people. We've had some openings and had some difficulty filling them," he says.

new haven

This shoreside city has a lot to offer, and Yale University attracts and spawns a creditable array of professional opportunities in areas such as utilities, telecommunications, software and even the defense industry.

"We've been in a growth mode for three years," says Dick LeFave, vice president and chief information officer at Southern New England Telephone Co. "Other utilities here are also in growth mode because of the nature of the industry change due to the competition model that Connecticut has embraced. We're changing from being a service provider to being a competitor."

Hot skill sets in the area are World Wide Web programming, Unix systems programming, Oracle Corp. and Sybase, Inc. database experience and experience with a host of client/server applications. Philip Long, director of academic computing services at Yale University says he is interested in "people who have more experience with a group. The traditional project manager is migrating to a team-based [concept]. It's a notion of the staff having more independence running their own projects."

hartford

Hartford, in the center of the state, has long been the bastion of international insurance consortia. The industry has been thrown into confusion with a string of metamorphoses, including changes in health care, mergers and the huge boost that client/server offers in efficiency and productivity.

Other possibilities for IS professionals here exist in government (Hartford is the state capital), software and banking; the manufacturing industry continues to be generally slow.

In the insurance industry, IS managers say they have positions for all levels and skill sets. Vincent Wright, IS staff consultant at United Health Care Corp., which has been through two major mergers in 14 months, says, "The companies each had their own legacy systems that they wanted to merge into one. We need people to help us tie things together with LAN/WAN integration experience. Believe it or not, our most dominant need is for Cobol people."

After a bit of a plateau, the Hartford area is once again in the market for IS people. "I always have my resume on the marketplace with one search firm or another," says Bob Hassinger, head of computer and telecommunications services at Advo, Inc.

"Three or four years ago, I'd get a few calls a week. Then I went a whole year without getting any calls. Now they're really picking up again," Hassinger says. ■

Menagh is a freelance writer in New York.

The good with the bad

Weighing the advantages and disadvantages of Connecticut markets

City	The good	The bad
Stamford	• Hudson River and Long Island are close by • Close to country and New York • Lots of top-level opportunities at corporate headquarters	• Great disparities in wealth and poverty • Crime, congestion and traffic • High cost of living in surrounding areas
New Haven	• Yale University located here • Yale art galleries, films, lectures • Fine repertory theaters • Located on the water; great boating, fishing, beaches	• Older city infrastructure • Some racial tension, crime, traffic • Most businesses aren't industry leaders
Hartford	• Brilliant foliage • Outdoor activities, such as skiing and boating • Lots of professional opportunities • Good schools, several colleges • Close to New York, Boston, the shore • Reasonable cost of living	• Lots of job pressure, burnout • Sometimes harsh winters • High taxes, gas prices

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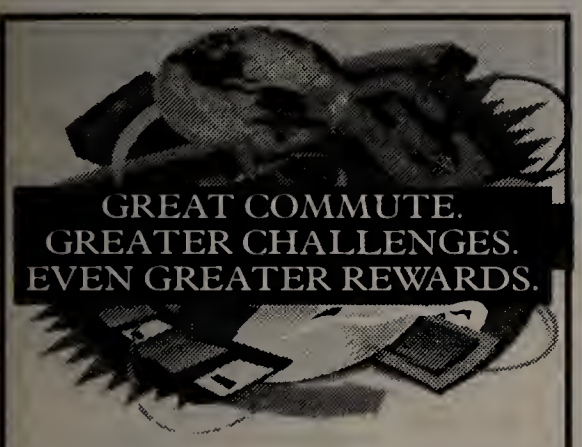

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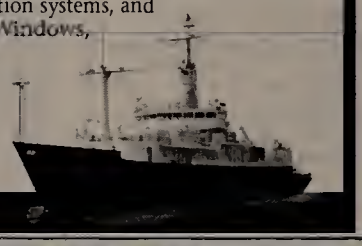

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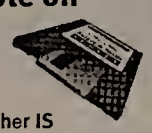

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Software Engineer required by Specialized Software Consultancy Company. Duties: Systems Analysis, Design and Development in networked Environments utilizing Unix servers as well as Personal Computers, using "C" & "C++". Development of applications using client server architecture and protocols such as TCP/IP, UUCP and RPC. Development of software in MS-Windows using SDK, DOS and UNIX platforms. Travel required to various unanticipated client sites throughout the United States, as assigned. Salary: $42,000/year, 40 hours/wk, 8:00 AM to 5:00 PM. Requirements: Bachelors Degree in either Engineering or Math or Computer Science and two years experience as either a Software Engineer, or Systems Analyst or Software Consultant and must have minimum two years experience in C++ coding, the use of PC-NFS programmers tool kit and RPC, Unix Systems and Network administration. Submit two (2) copies of resumes to Case # 60444, P.O. Box 8968, Boston, MA 02114.

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Programmer/Analyst. Eval. system requirements & devel. specifications for computer programs & systems. Interface with systems analyst and/or functional department management to formulate systems scope & obj. & ensure that the department objectives are supported. Design, test & debug computer applications programs. Perform basic system administration and database administration. Knowledge in Insurance Billing System, Purchasing System, Asset and Liability System, Sales and Production Projection System, Inventory System & Monitoring System. Proficiency in Informix-4GL, Informix-SQL, Informix interactive debugger, and UNIX Operating Systems. Must be willing to relocate within the U.S. on a project-by-project basis. Required computer applications. HPUX, System 4 Informix-4GL Programming & Debugger, Informix Online Administration and Informix Standard Engine Database Admin., GUPTA SQL Windows/Ouest, MS Access programming, UNIX Systems Administration. Must have knowledge of Insurance Billing, Purchasing, Asset & Liability, Sales & Production Projection, Inventory & Monitoring Systems. Formal Training: Program Logic Formulation, UNIX Operating System (SCO UNIX), Advanced UNIX, Informix-SQL, Informix-SE for Database Administrators, Informix-4GL & Programming in C Language. Must have Bachelor's Degree or equiv. in Computer Sci. or related and 2 years' work experience. Hrs. 9a-5p, M-F, $45,600 per yr. Apply to Georgia Dept. of Labor, Job Order #GA 5991923, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office

Consultant (Systems analyst). Design & develop custom manufacturing & distribution systems according to clients' functional reqs. using employer's CASE products, rel. database s/w & 4GL app. dev. tools. Analyze clients' Business Info. Flow reqs. using CASE, formulate enterprise models & design & develop custom applications. Software modules to be implemented include MRP, WIP, BOM/ENG, CRP & Inventory. Must have MS in IE, Mech. Eng. or Mfg. Eng., & coursework (3 sem. or quarter hours) in production systems, job costing, & comptr-aided mfg. Must have prior bckgrnd (coursework or project exp.) in rel databases, networks, Unix, C & 4GLs (including forms & reports). $3750/mo. 3 openings. Job/interview: Chicago. Resume to: CW-176510, Computerworld, P.O. Box 9171, Framingham, MA 01701-9171.

Computer Graphic Analyst: Memphis, TN: Use interactive multimedia s/ware like Macromedia Director, SuperCard, Microsoft Powerpoint & HyperCard to create interactive sales tools, audio-visual corporate presentations & interactive catalogs & use computer graphics s/ware like Adobe Photoshop, Adobe Illustrator, Adobe Separator, QuarkXpress, Macromedia Freehand & MS Word to create catalogs/annual reports/special promotions/identity systems/advrtsg campaigns/collateral material for major national/international clients. Prepare manuals. Interact with outside vendors like printers/illustrators/producers/typesetters/programmers. Direct photography. Engage in computer animation/text/video interactivity/3D modeling/DTP/image processing. Masters in Graphics or Visual Information Arts w/ 1 yr exp in job offered or 1 yr exp as Senior Visualizer or Computer Designer. Must have 6 mos work exp or have completed coursework in Advanced Design Concepts Graphic Design & Photo Methods. If qualifying, based on related occupation must have 1 yr exp in job duties listed. $40K/yr, 40 hrs/wk, 9a-5p. Send resumes stating Job Order # TN6200215 to: Kathy Malo, Job Service Program & Technical Support, Department of Employment Security, 500 James Robertson Parkway, 11TH Floor, Nashville, TN 37245-1200.

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Software Engineer required by Specialized Software Consultancy Company. Duties: Analysis, design, development of software using "C", Windows/NT, SDK, OSF/1, UNIX, VAX/VMS and Alpha AXP system. Porting of software and conversion 32 bit architecture to Alpha AXP 64 bit architecture. Knowledge of Assembly languages into (80x86) and experience in software development with equipment such as scanners and modems is a plus. Salary: $47,000/year, Hours: 40 hrs/wk, 8:00 AM to 5:00 PM. Requirements: Bachelors degree in either Engineering, or Math, or Computer Science, two years experience as either a Software Engineer or Systems Analyst or Software Consultant. Minimum two years in C, Windows, SDK, OSF/1, UNIX and VAX/VMS. Must have porting skills on to multiple platform 32 bit to 64 bit and VMS to UNIX. Should be proficient with complex build procedures UNIX system administration tasks. Travel required. Respond with two (2) copies of resumes to Case # 60510, P.O. Box 8968, Boston, MA 02114.

Software Engineer - Apply engineering concepts and develop state-of-the-art programs and user documentation of image processing tools, applications, and demonstrations for audio and video demos using Fractal Transform TM Technology. Development of SGIBASED software. Min. req. inc.: M.S. in Computer Science (B.S. in Engineering also req.), w/1yr. exp. in above pos. or 1 yr. exp. as Researcher or related, w/ ability to do programming in IDL, C; image processing, signal processing; developing user interface using X Windows. Also 6 mos. exp. or 1 college course in: 1) Compression/Decompression coding; 2) Advanced Fractal Coding Principles; 3) Computer Graphics in Windows C++; 4) IDL and VL; 5) Viewkit. 40.0 hr/wk. $40,000/yr. 8:30-5:30. Applicants send 2 copies of resume to: Georgia Department of Labor, Job order # GA 5991295, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

Sr. Software Engineer, Tampa, FL and other client locations: Analyze, design, develop, test, implement, maintain, enhance and modify client server applications using GUI tools such as PowerBuilder and Visual Basic against RDBMS such as Oracle and Sybase. Supervise the activities of programmers and analysts. Req'd Master's degree in Comp. Sc. or Comp. Sc. Engg. and 2 yrs. in the job duties or as a Programmer Analyst, Systems Analyst, Software Engineer or equivalent. Master's degree may be substituted by a Bachelor's degree in Comp. Sc. or Comp Sc. Engg. & 2 add'l yrs. in the job duties. 1 yr. of the exp. must be with UNIX, MS Windows, RDBMS (e.g Oracle and Sybase), GUI (e.g. Visual Basic and/or PowerBuilder). The experience may be concurrent. Supervise 5 Programmers/Programmers Analysts. M-F 8:00am to 5:00pm. 40hrs/wk $50,000/yr. Must have proof of legal authority to work in the United States. Send resume in duplicate to: Job Service of Florida, 2312 Gulf-to-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4090. Re: Job Order Number FL-1446230. No fee charged.

Systems Analyst. $42K/yr. 8a-5p, 40hr/wk. Work on 7780 transport applic systm to accept users data & 7780 transport h/ware. Systm tracks applics running on various transport machines by scanning docs. Duties involve debugging/tuning/testing/maintaining systm for attaining max processing speeds; also work on transport module interacting w/Cobol routines which in turn interact to the transport systm. Progrss responds to the requests made by the Cobol module. Bach or equiv degree in comp sci or engg. Reqd 2yr exp in job offd or in related occupation of systms or s/ware engr. 2yr exp in job offd or related job must show skills in Progress, Sybase (RDBMS), VAX, COBOL, MF COBOL, WIPRO COBOL, DBASE III PLUS AND C lang to perform the duties of the job. Job loc in Duluth, GA. Apply in person or send resume to: GADOL, JO# GA 5988024, 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or nearest DOL Field Srvce Office. Must have proof of legal auth to work permanently in US. EEO/AA Employer.

SYSTEMS ANALYST. Salary: $45,000.00 per year. Hours: 8:00 a.m. to 5:00p.m., 40 hours per week. Job Duties: To analyze, design, develop and test application software using DB2, IEW and ADW on IBM machines. To develop applications using Yourdon's structured systems development methodology involving data modeling (ERD), data normalization, structured flow charting and prototyping. Education Requirement: Bachelors or equivalent degree in computer science or engineering; or electronic or electrical engineering; or information management. Experience Requirement: 2 years in the job offered or in the related occupation of Data Administration Analyst. Special Requirement: Required 2 years experience must be in tools IEW/ADW BACHMAN, IEF, EXCELERATOR and OBJECTWARE. Applicant can have Masters degree in lieu of 2 years of experience. Job located in Atlanta, GA. Send resume to or apply at: Georgia Department of Labor, Job Order # GA 5993078, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

Technical Support Manager (Norcross, GA) Provide techn support on behalf of comp wholesale distrib to retailers, dealers & end users. Corrspd w/ customers, 75% from the Far East. Consult w/ customer re: desired purpose of system & suggest appropriate choices. Instruct customer on operation & upkeep of system. Modify systems according to indivl co. needs. Modify & debug systems for internal use & devl for resale. Troubleshoot any glitches which may occur & eval ability for expans or enhancmt. REQ'D: B.A. in Comp Sci and 1 yr 6mth exp in job offered or as Systems Analyst. Must be fluent in Mandarin & English & have exp w/ Lotus, Windows, Excel, C language, FoxPro, UNIX, Xenix, Novell Netware and SBT. 40 hrs/wk, $35,370.40/yr. Must have proof of legal auth to work in U.S. Apply in person or send TWO resumes to: GA Dept of Labor, Job Order# GA 5986550, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office for referral to employer. An employer paid ad.

TECHNICAL SUPPORT SPECIALIST. To conduct site surveys of restaurants (large chains) to determine computer hardware and Compris system configuration requirements. Installs and supports Compris point of sale hardware and software systems. Takes support calls from customers. Builds POS menu databases and trains systems users. Troubleshoots in person and on the telephone problems customer have with the system. Attends technical conferences and seminars to keep abreast of new software and hardware development. Must have restaurant operations knowledge and a thorough knowledge of Compris products and software. Must be fluent in Arabic and English and able to travel extensively to Middle East. 40 hrs/wk. $36,100 to $38,600 per yr. Bachelor's degree in Computer Science or Math, 2 yrs. experience including 6 mos. training on the Compris System. 8:00 a.m. - 5:00 p.m. Apply: Georgia Department of Labor, Job Order # GA 5986689, 465 Big Shanty Road, Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

Full-time Network Analyst to perform evaluation, acquisition, modification, implementation, testing, and post-evaluation of computer hardware, software and telecommunications equipment and other technology on a regular basis, including Traditional Computing Technology, Customer Services Technology, Telecommunications Technology and Evolving Technologies. Must have a Bachelor's degree in Electrical Engineering or a related field. Must have a Certified Novell Engineer Certificate. Must have three years experience in the job offered. Experience must have included Visual FoxPro, Win95, TCP/IP, DDE, HTML and JAVA. Salary $39,540/yr. Send resume to: CW-176530, Computerworld, Box 9171, Framingham, MA 01701-9171 or fax to 508-620-7739 referencing CW-176530.

PROGRAMMER/ANALYST Applying knowledge of programming & computer science, will develop & test digital-based computer programs used for telecommunication network management system; evaluate user needs & develop functional requirements; enter program codes into computer system; prepare documentation to describe program development, logic, coding & corrections; and install and test programs. $48,000; 40 hrs week 9-5 sched. B.S. in Computer Science or Engineering; 2 yrs. exp. in job or 2 yrs. related exp. as Design Engineer/Programmer/Analyst. Must possess at least 2 yrs. employment experience in a computer environment using UNIX, TCP/IP and digital alpha server. Send resumes to: Attn.: Job Order #3166044, Program Support - 3rd Floor, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109. An Equal opportunity Employer.

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Systems Analyst. $42K/yr. 8a-5p, 40hr/wk. Analyze/dsgn/dvlp user reqmnts Procedures & problems to automate processing & to improve existing comp systms on Hp-9000, VAX 8600, VAX 6510, DG AVION & use ORACLE 7.0, SQL*PLUS 3.1, SQL*FORMS 3.0, PL/SQL 2.0, & SQL* REPORTWRITER 1.1 & prgmng langs C, C++, PASCAL, COBOL, BASIC on oper'g sytms SCO-UNIX, HP-UNIX, ULTRIX & MS-DOS. Bach or equiv degree in comp sci or engg; electronics or electrical engg; or Physics or Math. Reqd 1yr exp in job offd or in related occupation of prgmr analyst or prgmr. Must have skills & proficiencies to perform the job duties as proven by work exp. or courses or training. Job loc in Duluth, GA. Apply in person or send resume to: GADOL, JO# GA 5988432, 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or nearest DOL Field Srvce Office. Must have proof of legal auth to work permanently in US. EEO/AA Employer.

Systems Engineer - Assist in the evolution of enhanced services platform. Responsible for the design and delivery of all sides of the platform. Requirements include at least a Bachelor of Science degree in Computer Science, Computer Information Systems or related field; with at least 2 years experience using ORACLE products. Thorough knowledge of Oracle Systems, Oracle Parallel Server, Powerbuilder, UNIX, AIX, HACMP, and telecommunications. Applicants must have unrestricted authorization to work in the United States. Salary $65,000.00 - $75,000.00/year. 40 hours/wk. Respond with two copies of resume to Case #60467, P.O. Box 8968, Boston, MA 02114.

Technical Writer: Develop, write, edit, update tech manuals for software, providing understandable, integrated technical support for staff, distributors & customers applying academic or work exp w/ mgmt of technology principles to enhance technical side productivity. Provide technical/customer support to end users. Prep manuals, releases, advertising/catalog documentation for Quotes & Orders software integrating w/ ACTI or Goldmine contact mgrs as well as QuickBooks accounting program & Quicken & MS Money financial apps, schedule/call disbursements software for sales mgmt. Req: Master's in Management of Technology + 1 yrs exp or 1 yr as Computer Sales Accounts Mgr w/ Financial Analysis & Market Research Responsibilities. $500/wk, 40hrs/wk, 9-5. Submit resume to: Job Service of Florida, 701 SW 27th Avenue, Room 47, Miami, FL 33135-3014. Re: Job Order # - FL 1450739.

Systems Analyst. $42K/yr. 8a-5p, 40hr/wk. Install/dsgn/dvlp/prgm systms & relational applics on AS/400 systm using RPG/400 & CL/400 running under OS/400 envrmnt. Bach or equiv in comp sci or engg. Reqd 1.5yr exp in job offd or in related occupation of prgmr analyst. Reqd 1.5yr exp in job offd or in related occupation must incl work in analysis & prgmng on AS/400 using RPG/400 & CL/400 running on OS/400 envrmnt. Job loc in Duluth, GA. Apply in person or send resume to: GADOL, JO# GA 5988296, 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or nearest DOL Field Srvce Office. Must have proof of legal auth to work permanently in US. EEO/AA Employer.

Senior Computer Systems Designer: Design, program, test major/minor enhancements to AS/400 based field info systems rental/leasing apps. Write specs to describe functions provided. Develop/maintain AS/400, S/36 & dealer PC apps, modify FIS rental software to seamlessly interface w/ other platforms. Develop test cases/scenarios for close interaction w/ Systems Assurance & Consumer Rental Systems support group. Req: Bachelor's in Electronics, Communications Engineering, Computer Science or closely related discipline and 2 yrs exp or 2 yrs as Software Engineer. $57,000/yr, 40hrs/wk, 9-5. Submit resume to: Job Service of Florida, 701 SW 27th Avenue, Room 47, Miami, FL 33135-3014, Re: Job Order # - FL 1449866.

SYSTEMS ANALYST. Physical and logical database design, database monitoring and tuning, data dictionary, data warehousing and systems analysis. REQUIREMENTS: Bachelor of Science degree in Computer Science or Math-related and two years experience in job offered required. Two years experience ORACLE 7.0, SQL*DBA, OPL/SQL*Plus, and PRO*C required. Must be able to travel. SALARY: $41,000/year. Qualified applicants submit resume to: Georgia Department of Labor, Job Order # GA5985838, 2943 N. Druid Hills Rd., Atlanta, Georgia 30329-3909 or the nearest Department of Labor Field Service Office.

Programmer/Analyst (Varying job sites, Miami/S. Florida Metro, TX) Design & dev of GUI (Graphical User Interface) information management system, using VISUAL BASIC & MICROSOFT Access. Design relational database management system, using SQL programs. Develop DLL procedures & Window API functions. Master's in Comp. Sci. or Comp. Engineering & six months exp. in job offered. $40,000/yr. 40 hrs./wk., 9-5, M-F. Send resume to: Job Service of Florida, 701 SW 27th Ave., Room 47, Miami, FL 33135-3014. Re: Job Order Number FL-1444690.

Software Engineer - Alpharetta, GA. Design & dvlpmnt of cross platform s/w & GUI design utilizing GUI cross platform library in X-windows/Motif & MS windows environment using C/C++/Visual C++ for the SUN/HP/DEC running UNIX operating system & PC 486's. Network protocols TCP/SMTP dvlpmnt in C/C++ in UNIX environment. MSCS & 1yr exp. 40 hr/wk 9-5 M-F, $49,754/yr. Must have proof of legal authority to work in the U.S. Apply in person or by duplicate resume to: GA Dept of Labor, JO#GA5989095, 465 Big Shanty Rd, Marietta, GA 30066-3303 or the nearest Dept of Labor Field Service Office.

Software Engineer: Design, analyze, & implement customized & generic database management systems which are portable in a multiplatform environment; implement a database independent warehouse management system (AutoTrak) using C, C++, ODBC & MFC and integrate it with barcode scanning systems like Telxon GCS/Symbol; customize, maintain and develop code in 4 G L.; Masters Degree in Computer Engineering; knowledge to include Oracle, Informix and Sybase, C and C++ under Windows and UNIX environment; 40 Hrs. 8:30 AM to 5:30 PM; $35,321.00/yr. Direct resume only to Job Service of Florida, 701 S.W. 27th Avenue, Room 47, Miami, Florida 33135-3014; Ref. Job Order # FL-1445737.

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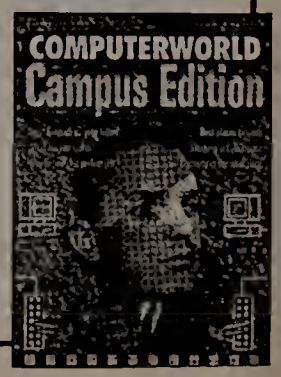

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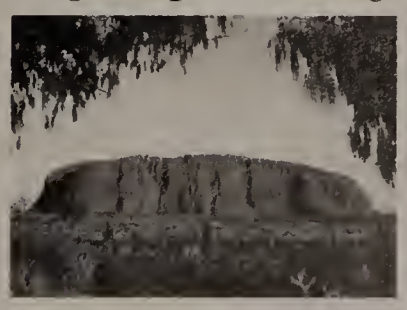

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SENIOR SOFTWARE ENGINEER. (2 positions) 40 hrs./wk., 8am-5pm, $56,000/yr. Carry out analysis of user requirements, external/internal design, prepare program specifications, develop, test and implement software application system utilizing UNIX, C, C++, PASCAL, MOTIF and Object Oriented Methodologies. Reqr. Bachelor's degr. in Computer or Electronics or Mechanical Engrng. and 5 yrs. expr. in job offered or 5 yrs. expr. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr. work experience in developing s/w application systems & with UNIX C, C++, PASCAL, MOTIF and Object Oriented Technology. Employer is S/W development/consulting firm. Relocation to various client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit MI 48202. Ref #77896.

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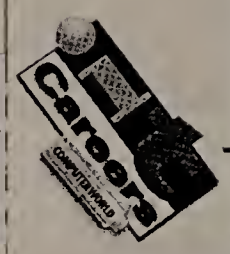
Consultant, 40hrs/wk., 9am - 5pm, $55,120/yr. Design, development, implementation & testing of software applications for business clients including telecommunications. Client/server & object-oriented technology. Database & application design. Tools: Windows; ORACLE; Visual C/C++; SQL*Forms; PL/SQL; SQL*Menu; SQL*Loader; SQL*Plus; Visual Basic; Embedded SQL; C/C++; UNIX. M.S. in Computer Science as well as 1 yr. experience in job offered or as Consultant required. Previous experience must include: Windows; ORACLE; Visual C/C++; SQL* Forms; PL/SQL; SQL*Menu; SQL*Loader; SQL*Plus; UNIX. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Len Boksa, Reference #V-IL-15579-B. NO CALLS. An Employer Paid Ad.



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Career Survey: Pharmaceuticals

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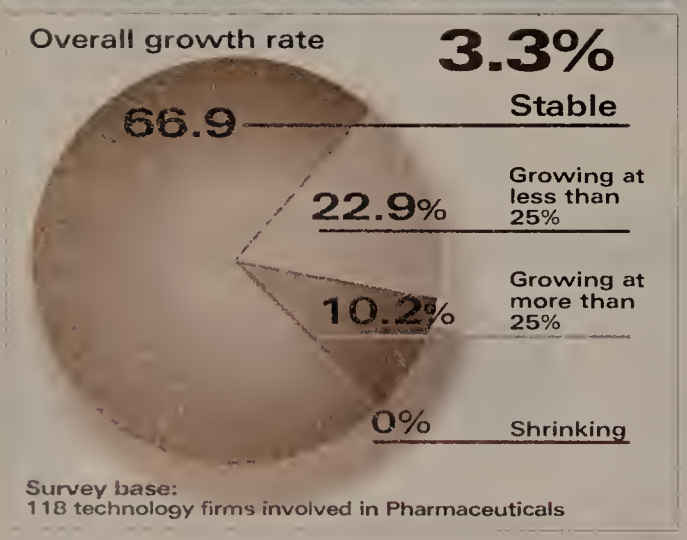
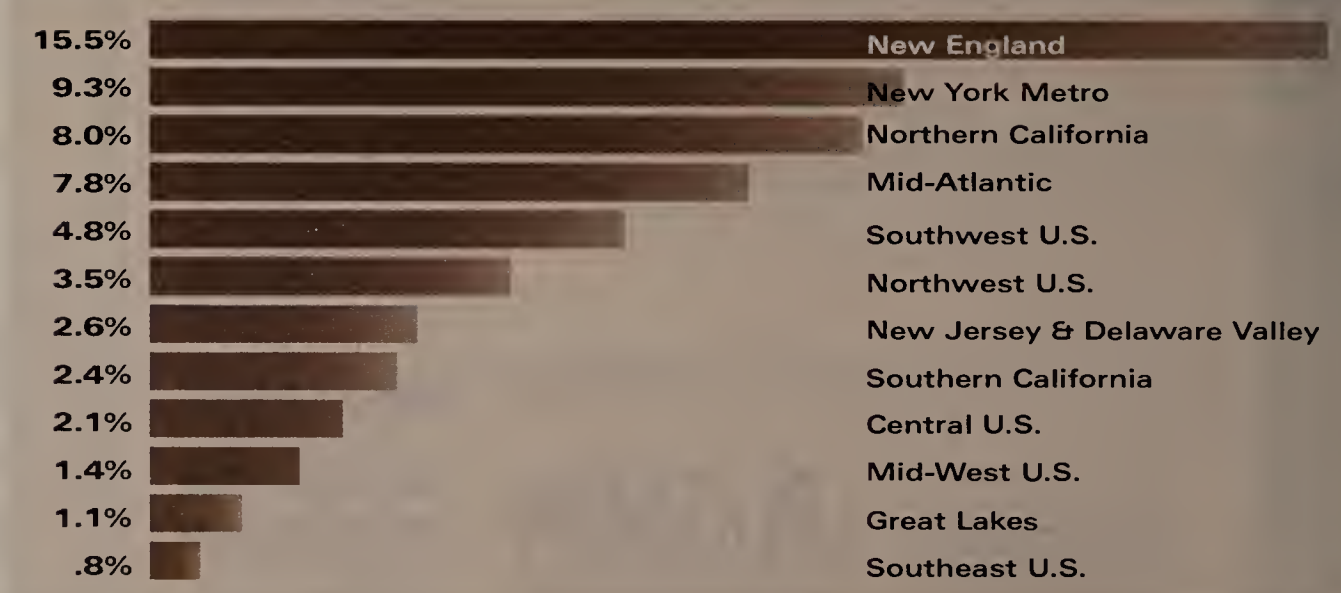


Survey base:
118 technology firms involved in Pharmaceuticals

Survey conducted between December '95 and June '96;

Regional Growth Analysis



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers.
This survey relates to the 29,383 tracked firms with fewer than 1,000 employees.

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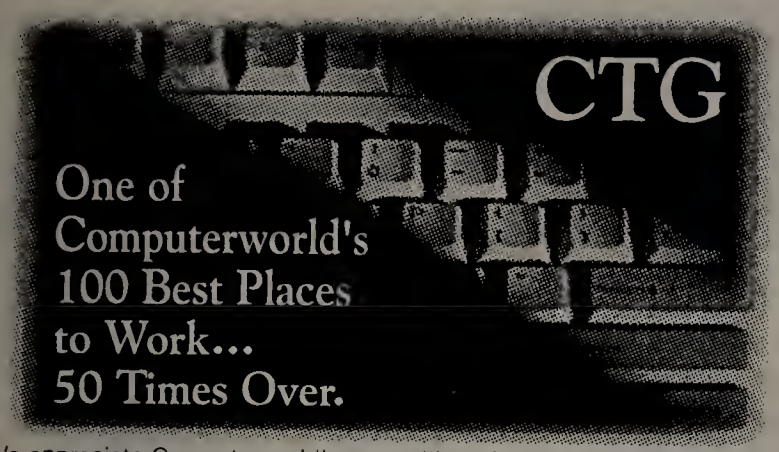

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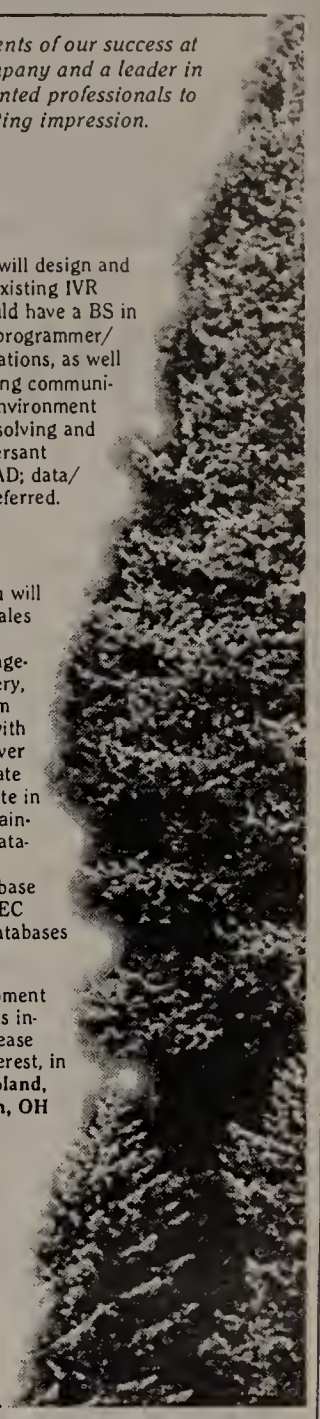

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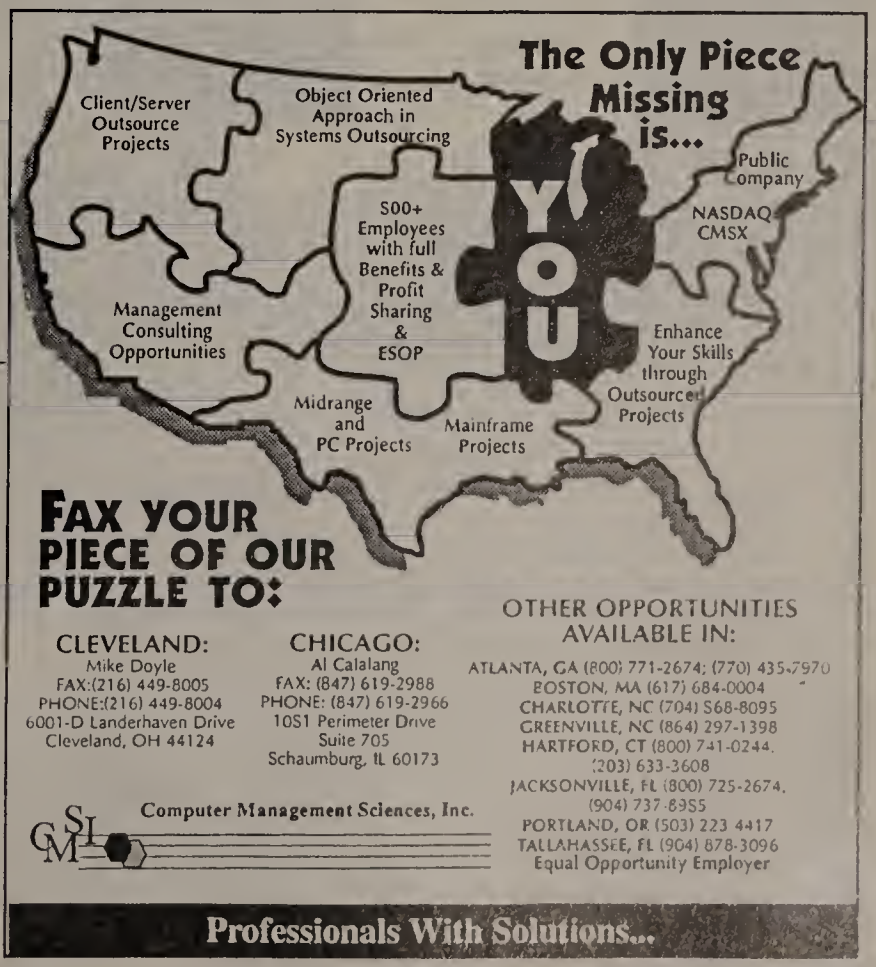

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Web resources

How to create a Web site

By Amy Malloy

Which is your best bet — doing research to develop a comprehensive understanding of a project or having your company blindly invest thousands of dollars in a project you don't fully understand? The answer is pretty obvious.

Nonetheless, many companies that are hot to jump on the Internet bandwagon are taking a haphazard approach to the creation of World Wide Web sites that could do more harm than good. It's necessary to take time to understand how to build and maintain a Web site. Luckily, there are numerous books and sites on this topic. Here's a look at what's out there:

Many sites are dedicated to educating the HTML-illiterate. For those starting from ground zero, "Beginner's Guide to HTML" serves as a good resource. The National Center for Supercomputing Applications at the University of Illinois in Urbana offers this tutorial, which simplifies the terms and concepts associated with Hypertext Markup Language (HTML). Few assumptions are made about the reader's knowledge of HTML.

www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html

After covering the basics, a Web author may find the topics discussed in "Composing Good HTML" an appropriate next step. Available at Carnegie Mellon University's Web site, this tutorial delves into HTML on a deeper level. "It is really aimed at people who are familiar with HTML but want to learn more about composing HTML so that it works on a wide variety of browsers — so it is portable," says Eric Tilton, the site's author and a doctorate student at the university.

The tutorial offers tips and advice gathered during Tilton's experiences with HTML. By keeping a list of what he learned while creating Web pages and what he wished the resources he used contained, Tilton was able to put together a comprehensive HTML guide.

In addition to this site, Tilton wrote a resource book with Tyler Jones and Carl Steadman called *Web Weaving*. The book details topics such as writing in HTML, designing a site, finding a server and making connections between pages, Tilton says. Additional information about the book is available on the site.

www.cs.cmu.edu/~tilt/cgh

Case Western Reserve University's site offers something for the beginner and the more advanced Web developer. "Introduction to HTML" and "Intermediate HTML" are tutorials by Eric Meyer, an information technologies systems specialist at the university, that are based on seminars he conducted at Case. Meyer offers his tutorials to the public online because he says the university's needs are indicative of the population at large. He says books and tutorials previously available weren't accessible to his students.

www.cwru.edu/help/introHTML/toc.html

Surfers new to the Web may feel intimidated by the World Wide Web Consortium's site — the first on the Web — but it provides information for all levels of interest and expertise. The mission of the consortium, whose director is Web founder Tim Berners-Lee, is to supply information on topics such as Web standards, how to run a site securely, electronic commerce and HTML — the whole spectrum, explains Rohit Khare, a member of the technical staff on electronic commerce.

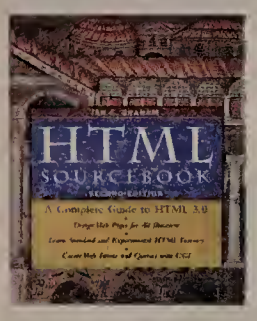
The consortium furthers the aim of putting standards and common approaches in place to ensure that the Web serves its function. "We are here to make sure each company does not create a site in a vacuum," says Sally Khudairi, webmaster for the consortium.

www.w3.org/pub/WWW

Looking for an overall view? *The Yale Center for Advanced Instructional Media's Web Style Manual* offers a comprehensive description of Web site creation. The topics covered and advice given are based on 10 years' experience. The manual is divided into three sections: "Interface Design in WWW Systems," "WWW Page Design" and "Optimizing Performance in WWW Pages." Each section contains textual and graphical examples of successful approaches on topics such as site structure, sizing graphics and typography.

info.med.yale.edu/caim/StyleManual_Top.HTML

Malloy is *Computerworld*'s research assistant.



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By Ian Graham
www.hprc.utoronto.ca/HTMLdocs/NewHTML/book.html

Running a Perfect Web Site
By David M. Chandler
www.iwork.net/~chandler/book.htm

Build a Web Site:
The Programmer's Guide to Creating, Building, and Maintaining a Web Presence
By Net.Genesis and Devra Hall
www.primapublishing.com/series/builda.html

How to Set Up and Maintain a World Wide Web Site:
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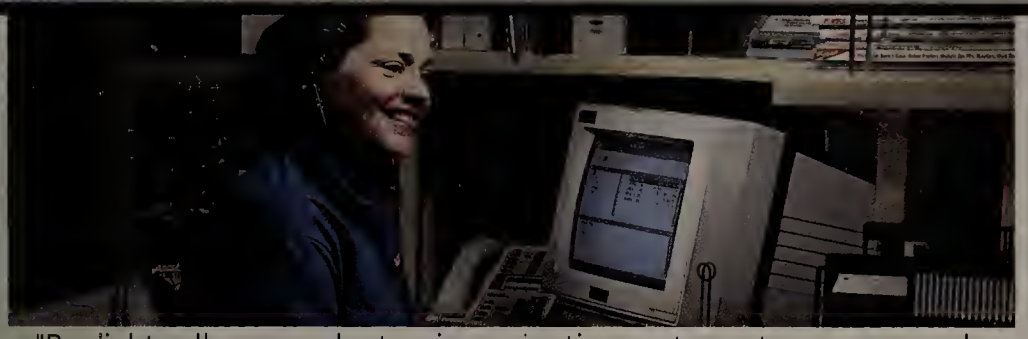

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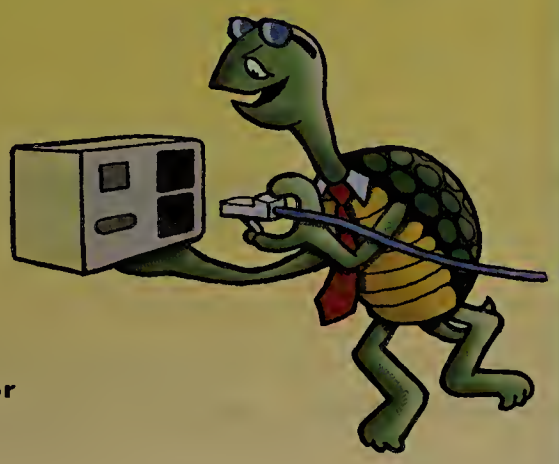

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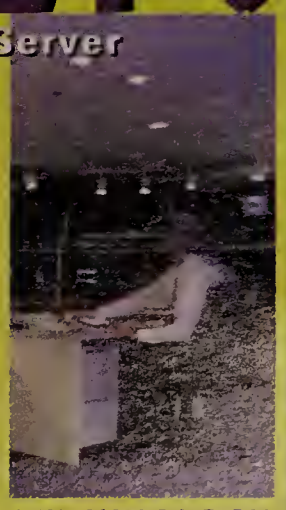

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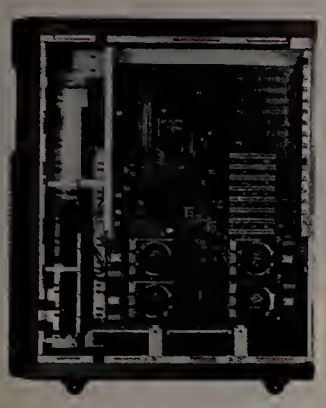

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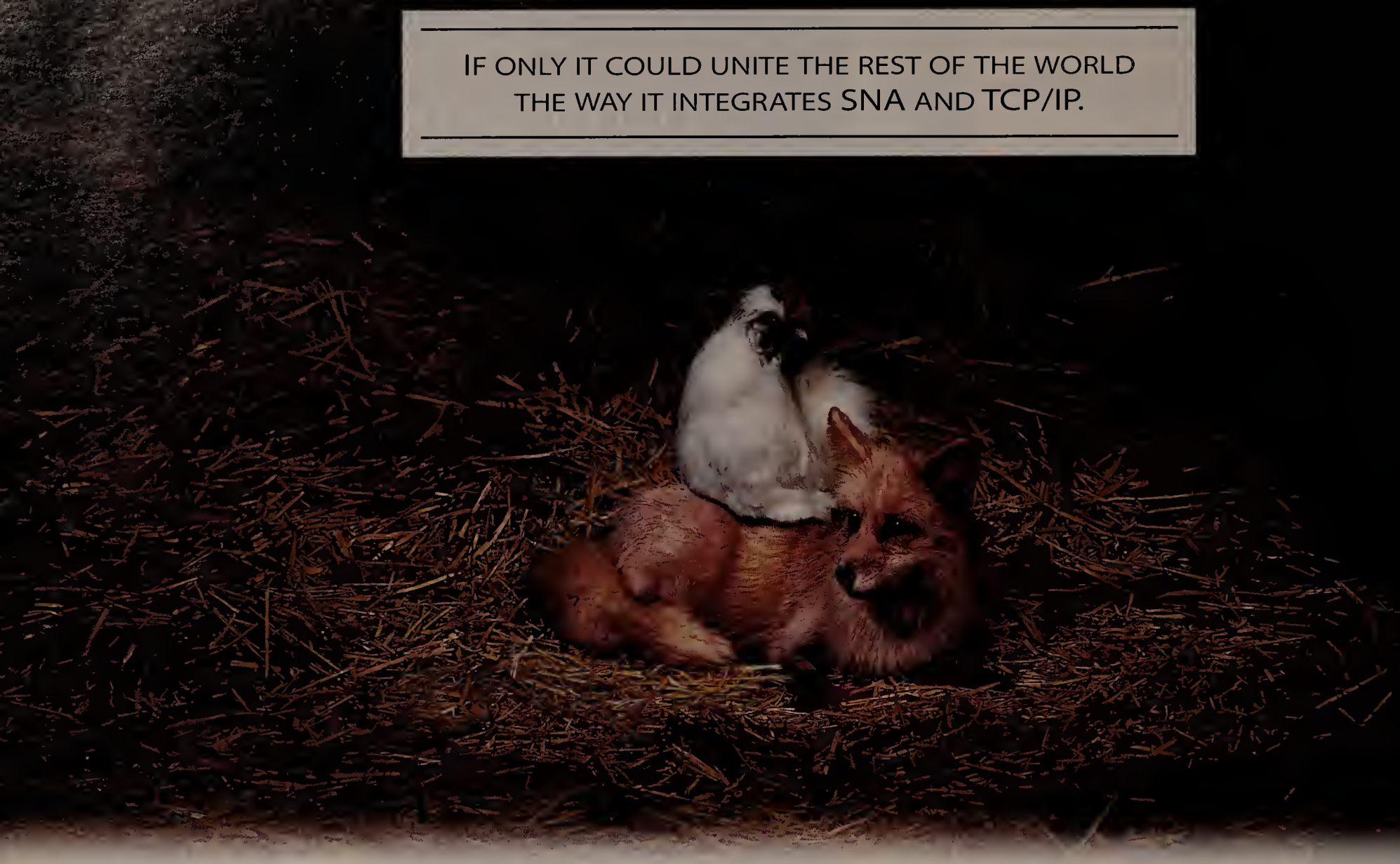

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Finance & Investing

Next week: The ups and downs of Internet IPOs

Have computer, *will* trade

ETrade Securities *charges customers $14.95 for most trades*

By Tam Harbert

Online investing is becoming a popular option for the experienced investor, and the big names in discount brokerages are racing to offer a variety of ways for their customers to trade online.

Currently, about 25 brokers offer online investing, says Michael S. Gutierrez, assistant editor of "Computerized Investing," a newsletter published by the American Association of Individual Investors in Chicago.

These brokerages let investors with an account, a modem and specialized software conduct their transactions online at discounts of around 10%. The software, proprietary to each brokerage, contains features that also allow investors to manage their portfolio, track stock prices and obtain investing information.

And for those with faith in the security of the Internet, brokerages are even starting to offer trading directly via their World Wide Web sites. ETrade Securities, Accutrade and Charles Schwab & Co. all offer trading on their Web sites.

Charles Schwab's recent history is typical of the road many of these brokerages are traveling. "We're trying to provide investors with as many different options as possible," says Glen Mathison, a spokesman for the San Francisco-based company.

The firm started by offering StreetSmart, a proprietary software package that enables customers to dial in to the brokerage directly and conduct trades at 10% off the published commission schedule, Mathison says.

Then the company offered another online trading package called E.Schwab. This second offering is similar to StreetSmart but is geared strictly for the investor who needs little personal service, with the result being lower prices (see chart).

Finally, Schwab last month launched 'net trading via its Web site. Although only stocks can be traded on the Web now, the company plans to offer mutual fund trading this summer. Proprietary software is not required for the Web-based trading, but users pay the same trading fees as with StreetSmart or E.Schwab, depending on the level of service they need.

Similarly, Accutrade — which made its name by leveraging telephone technology to allow investors to place trades — has expanded the choices it offers investors. "We want to give the customer more access and more control of their account, no matter where they are," says Michael Anderson, president and chief operating officer at Accutrade.

The company offered DOS-based software for online trading in 1993. This spring, it introduced Accutrade for Windows.

In addition to the PC, Accutrade's program is compatible with Sharp Corp.'s Zaurus, a personal digital assistant. This provides investors with the ability to use the program to trade from virtually anywhere there is a phone.

Another distinctive feature of Accutrade's software is that the user can program it to place a specific trade when particular conditions are met.

Accutrade for Windows *can be programmed to place trades automatically*

A sampling of online discount brokers

Broker	Software and price	Cost of trade	Minimum to open account
Accutrade (402) 597-7764 www.accutrade.com	Accutrade for Windows, free	$28 plus 2 cents per share	$5,000 in cash or stock
Charles Schwab (800) 334-4455 www.schwab.com and www.eschwab.com	StreetSmart 2.0 for Windows, $39.95; E.Schwab, $6.95	10% off regular trade rates (StreetSmart); $39 for the first 1,000 shares, 3 cents for each additional share (E.Schwab)	$1,000 (StreetSmart); $5,000 (E.Schwab)
ETrade (800) 786-2573 www.etrade.com	Navigator, $9.95	$14.95 on the first 5,000 shares of a listed market order, 1 cent each additional share	$1,000 in cash or securities; $2,000 if trading on margin
Fidelity Investment (800) 544-9375 www.fid-inv.com	Fidelity Online Xpress, $49.95	10% off regular trade rates	$500, depending on the type and number of accounts an investor has with the brokerage

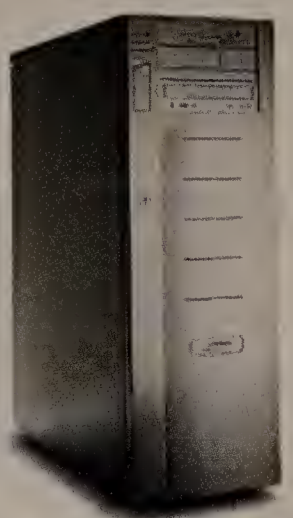
CD-ROM catalogs investment software

The American Association of Individual Investors' *Interactive Guide to Computerized Investing*, long available as a book, is now available on CD-ROM. The disk contains information on 750 investment software programs and information services. Users can search by attributes such as hardware platform or type of program. Included are demos for 90 of the programs. Write the group at 625 N. Michigan Ave., Chicago, Ill., 60611, or call (312) 280-0170. The cost is $14.95 for members and $19.95 for nonmembers.

Julie Bort, a freelance writer in Dillon, Colo., contributed to this report.

Now is a particularly good time to buy a Compaq ProLiant 4500 server. (As if there were ever a bad time.) That's because from now until June 30, Compaq will give you an

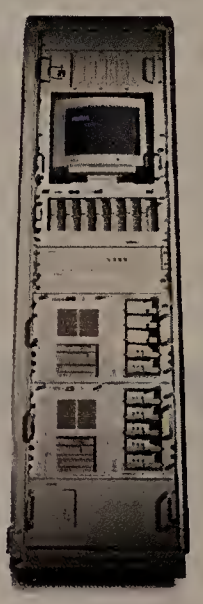
Buy Any Qualifying Compaq Server Now And We'll Throw In An Extra Processor Board. *(Free)*



Compaq ProLiant 4500 Tower

additional processor board at no additional cost.* Depending on the model you buy, that can mean up to an 80% boost to the server's performance. And if you decide later to upgrade to Pentium® Pro technology, you can protect your investment with our premium-free upgrade program.†

To take advantage of this offer, call your local reseller today. Or call us at 1-800-410-8458 to locate the Compaq Reseller nearest you. Buying a ProLiant server is always a smart decision. Buying one now could get you a corner office.



Compaq ProLiant 4500 Rack

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The Week in Stocks

Gainers

PERCENT

Radius Inc.	26.3
Business Objects	24.4
Tektronix Inc.	14.1
Oracle Corp.	11.1
Retix	8.9
AMERITECH Corp.	7.0
Micro Focus	6.9
Picturetel Corp.	6.5

DOLLAR

Business Objects	8.00
Tektronix Inc.	5.13
AMERITECH Corp.	3.88
Oracle Corp.	3.75
Computer Associates	2.63
UUNET Tech.	2.50
Sun Microsystems Inc.	2.44
Picturetel Corp.	2.25

Losers

PERCENT

Meridian Data Inc.	-39.7
Lattice Semiconductor(L)	-34.3
Network Equipment Tech.(L)	-25.6
NetManage Inc.	-23.3
Streamlogic Corp.	-22.4
Lycos Inc.(L)	-22.0
Iomega Corp.	-21.6
ParcPlace Systems Inc.	-19.4

DOLLAR

Lattice Semiconductor(L)	-12.00
Peoplesoft	-9.75
Netscape Comm. Corp.	-9.38
Iomega Corp.	-8.38
Shiva Corp.(H)	-8.25
Computer Horizons	-8.25
Security Dynamics Tech.	-7.50
Network Equipment Tech.(L)	-6.75

Industry Almanac

Roadkill on the infobahn?

Considering the Internet boom, Wall Street should be enthusiastic about a networking software developer, right? Not exactly. That is precisely what **FTP Software, Inc. (Nasdaq:FTPS)** does, but analysts say the Andover, Mass., company is going through a difficult transition. The reason? The company got blindsided by the quick rise of the Internet.

"FTP needed to rethink its focus, as did the whole TCP/IP industry" when **Microsoft Corp. (Nasdaq:MSFT)** and **Novell, Inc. (Nasdaq:NOVL)** started to include TCP/IP support in their operating systems, says Frederick Ziegel, a partner at Punk, Ziegel & Knoell, a brokerage in New York. That move quickly made some of FTP's TCP/IP tools outdated, Ziegel says. He rates the stock a hold.

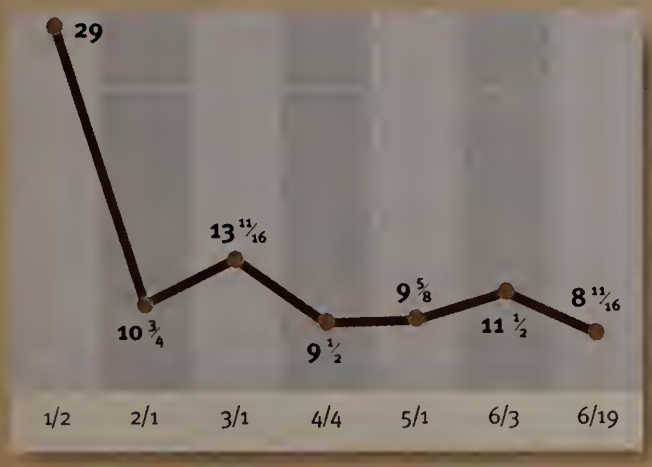
The company's new strategy is to offer a set of integrated intranet applications that combine FTP's homegrown technologies with those it acquired by purchasing Firefox Communications, Inc. last year, according to analysts.

Not everyone sees FTP's prospects as dim. Josephthal Lyon & Ross rates the stock a buy and expects its price to climb to $20 within the next 12 months, says Bert Hochfeld, an analyst at the New York firm.

FTP's transition is being supervised by Glenn Hazard, the company's new president and chief operating officer. The combination of Hazard's good track record at transforming businesses, FTP's solid financial standing and its engineering talent gives the firm a good chance to improve its prospects, Hochfeld says. — *Stewart Deck*

Transition troubles

FTP Software's rollercoaster stock price reflects the company's difficult transition to intranet applications



Exch	52-Week Range			June 21 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						OFF 4.03%
COMS	53.63	31.13	3 COM Corp.	48.38	1.38	2.9
AIT	66.88	44.00	AMERITECH Corp.	58.88	3.88	7.0
AXE	22.13	15.63	Anixter Intl.	15.75	-0.75	-4.5
APTS	12.13	2.75	Apertus Tech.	3.63	-0.19	-4.9
T	68.88	51.38	AT & T	62.25	0.00	0.0
ASND	71.25	10.88	Ascend Communications	55.25	-5.00	-8.3
BNYN	14.25	6.00	Banyan Systems Inc.	8.13	-1.00	-11.0
BAY	50.00	24.63	Bay Networks Inc. (L)	27.00	-0.38	-1.4
BEL	80.38	43.50	Bell Atlantic Corp.	61.63	0.50	0.8
BLS	45.88	31.00	Bellsouth Corp.	40.00	1.13	2.9
BRKT	32.75	6.50	Brooktrout Technology	25.44	-0.23	-0.9
CS	87.75	48.63	Cabletron Systems	66.13	-0.88	-1.3
CSCC	67.38	13.13	Cascade Communications	62.88	0.88	1.4
CGRM	25.13	13.25	Centigram Communications	15.13	-1.38	-8.3
CSCO	57.88	24.25	Cisco Systems Inc.	53.63	-1.63	-2.9
CLIX	11.38	4.50	Compression Labs Inc.	6.00	-0.50	-7.7
CMNT	12.75	4.00	Computer Network Tech.	7.19	-0.94	-11.5
XCOM	14.50	8.75	CrossComm	10.50	0.00	0.0
DIGI	64.00	21.88	DSC Communications	26.13	-2.69	-9.3
FORE	44.75	12.88	FORE Systems Inc.	32.63	-1.63	-4.7
GDC	21.88	10.00	General Datacomm Inds.	15.25	-1.63	-9.6
GSX	42.50	28.00	General Signal Networks	37.75	-0.25	-0.7
GTE	49.25	33.00	GTE Corp.	44.38	2.00	4.7
LU	39.25	29.75	Lucent Tech.	36.88	-0.50	-1.3
MCIC	31.13	19.63	MCI Commmunications Corp.	25.63	-2.13	-7.7
MICM	14.38	6.00	MICOM Communications Corp.	11.75	-0.13	-1.1
MNPI	34.50	11.13	Microcom Inc. (L)	11.13	-2.50	-18.3
NETM	34.00	9.38	NetManage Inc.	11.13	-3.38	-23.3
NTRX	10.88	3.63	Netrix Corp.	8.88	-1.50	-14.5
NCDI	12.00	2.88	Network Computing Devices	5.25	-0.63	-10.6
NWK	42.00	19.63	Network Equipment Tech. (L)	19.63	-6.75	-25.6
NETG	27.63	11.75	Network General	24.13	-2.38	-9.0
NN	74.25	25.00	Newbrioge Networks Corp.	61.25	-1.63	-2.6
NT	55.38	31.50	Northern Telecom Ltd.	53.50	1.13	2.1
NOVL	21.63	11.38	Novell Inc.	14.00	0.19	1.4
NYN	59.25	39.25	Nynex Corp.	46.00	-0.13	-0.3
OCTL	26.25	12.63	Octel Communications Corp.	22.94	-1.31	-5.4
ODSI	43.25	17.00	Optical Data Systems Inc.	22.75	-1.25	-5.2
PAC	35.25	25.63	Pacific Telesis	33.88	0.50	1.5
PCTL	44.72	20.75	Picturetel Corp.	37.13	2.25	6.5
PTON	10.75	4.63	Proteon Inc. (L)	5.00	-0.50	-9.1
RACO	7.88	3.88	Racotek Inc.	5.25	-1.00	-16.0
RETX	10.88	1.81	Retix	7.63	0.63	8.9
S8C	60.25	45.50	S8C Communications	49.50	0.25	0.5
SFA	23.38	11.38	Scientific Atlanta Inc.	15.25	-1.00	-6.2
SHVA	87.25	19.38	Shiva Corp. (H)	76.00	-8.25	-9.8
FON	45.50	29.25	Sprint Corp.	40.63	0.25	0.6
SMSC	23.50	14.38	Standard Microsystems Corp.	15.88	-1.00	-5.9
STRM	57.50	20.50	Stratacom Inc.	53.38	-1.13	-2.1
TBIT	13.88	2.38	Telebit Corp.	12.75	0.75	6.3
USRX	105.50	25.50	US Robotics	85.63	-2.81	-3.2
USW	48.38	28.38	U S West Inc.	32.00	0.63	2.0
XIRC	17.50	8.88	Xircom	11.88	0.13	1.1
XYLN	76.00	47.50	Xylan Corp. (L)	47.50	-2.00	-4.0
PCs and Workstations						OFF 2.79%
AALR	10.38	5.75	Advanced Logic Research	8.75	-0.38	-4.1
AAPL	50.13	22.63	Apple Computer Inc. (L)	22.63	-1.50	-6.2
ASTA	18.50	4.63	AST Research Inc.	7.44	-0.19	-2.5
CPQ	56.75	35.88	Compaq Computer Corp.	48.25	1.25	2.7
DELL	57.25	23.00	Dell Computer Corp.	51.75	0.38	0.7
GATE	41.50	18.00	Gateway 2000 Inc.	34.63	-4.38	-11.2
HWP	115.38	70.00	Hewlett Packard Co.	95.38	-4.50	-4.5
MUEI	29.88	9.00	Micron International Inc.	13.56	-0.44	-3.1
NIPNY	75.13	51.00	NEC America	55.00	-2.13	-3.7
SGI	45.63	21.13	Silicon Graphics	24.88	-0.75	-2.9
SUNW	67.13	19.75	Sun Microsystems Inc.	59.94	2.44	4.2
Large Systems						OFF 8.20%
AMH	13.50	6.75	Amdahl Corp.	10.25	-0.88	-7.9
DGN	19.13	8.13	Data General Corp.	12.50	-0.63	-4.8
DEC	76.50	35.13	Digital Equipment Corp.	44.13	-2.38	-5.1
IBM	128.88	83.13	IBM	100.00	-3.00	-2.9
MDCD	20.25	4.94	Merioian Data Inc.	9.13	-6.00	-39.7
NETF	7.50	3.88	NetFrame	5.00	-0.38	-7.0
SQNT	25.38	10.13	Sequent Computer Sys.	12.75	-0.75	-5.6
SEQS	10.00	2.88	Sequoia Systems Inc.	3.25	-0.13	-3.7
SRA	36.13	23.00	Stratus Computer Inc.	31.63	0.25	0.8
TDM	17.50	8.38	Tandem Computers Inc.	10.38	-0.75	-6.7
TRCD	7.56	2.00	TriCoro Systems	5.13	-0.63	-10.9
UIS	11.50	5.50	Unisys Corp.	7.00	-0.38	-5.1
Software						OFF 4.84%
ADBE	74.25	30.00	Adobe Systems Inc.	35.88	0.50	1.4
AMSWA	8.75	3.63	American Software Inc.	4.63	-0.38	-7.5
APLX	42.50	8.25	Applix Inc.	28.75	-1.50	-5.0
ARSW	82.75	28.75	Arbor Software	53.25	-6.25	-10.5
ADSK	53.00	27.75	Autodesk Inc.	33.81	1.31	4.0
BACH	11.88	4.63	Bachman Info. Systems	7.63	-1.25	-14.1
BGSS	50.00	29.75	BGS Systems Inc.	38.00	-2.50	-6.2
BMCS	67.75	32.50	BMC Software Inc.	62.50	-1.63	-2.5
BOOL	26.75	19.25	Boole and Babbage	24.75	-0.13	-0.5
BORL	21.25	10.00	Borland Int'l Inc.	10.00	-0.63	-5.9
BOBJY	55.50	15.88	Business Objects	40.75	8.00	24.4
CYE	27.88	14.13	Cheyenne Software Inc.	18.75	-2.50	-11.8
COGNF	27.38	9.00	Cognos Inc.	20.75	-1.50	-6.7
CA	82.13	37.25	Computer Associates	70.38	2.63	3.9
CVN	15.50	5.25	Computervision Corp.	10.63	-0.50	-4.5
CPWR	40.75	15.50	Compuware Corp. (H)	39.75	-0.50	-1.2
CSRE	31.50	12.38	Comshare Inc.	27.50	-0.25	-0.9
COSFF	19.50	8.38	Corel Corp.	12.00	-0.13	-1.0
DWTI	15.75	5.75	Dataware Technologies Inc.	6.44	-0.31	-4.6
FILE	67.00	34.75	Filenet Corp.	38.50	-4.50	-10.5
DDDDF	8.25	3.56	4th Dimension	7.13	-0.06	-0.9
FTPS	40.63	8.13	FTP Software Inc.	8.50	-1.00	-10.5
GSOF	26.00	7.00	Group I Software	8.50	-0.75	-8.1
GPTAE	10.50	3.75	Gupta	5.00	-0.88	-14.9
HUM	28.88	17.00	Hummingbiro Comm. Ltd.	18.38	-0.13	-0.7
HYSW	28.38	9.75	Hyperion Software Corp.	12.88	-0.38	-2.8
IRIC	16.25	10.00	Information Resources	12.50	-0.38	-2.9
IFMX	36.75	16.88	Informix Corp.	21.50	-1.38	-6.0
INGR	20.13	10.88	Intergraph Corp.	12.25	0.63	5.4
LEAF	12.63	6.13	Interleaf Inc.	7.13	-0.44	-5.8
ISLI	26.25	8.75	Intersolv Inc.	9.88	-0.25	-2.5
INTU	89.25	36.13	Intuit Inc.	48.75	-5.00	-9.3
LGWX	22.25	10.88	Logic Works	12.25	-1.25	-9.3
MAPS	37.75	10.00	MapInfo Corp.	10.00	-2.00	-16.7
MATH	9.25	4.25	MathSoft	6.13	-0.88	-12.5
MCAF	51.00	12.38	McAfee Associates (H)	50.00	-0.75	-1.5
MENT	22.88	10.88	Mentor Graphics	16.50	-0.63	-3.6
MIFGY	21.25	8.25	Micro Focus	13.50	0.88	6.9
MGXI	18.63	6.75	Micrografx Inc.	15.00	-1.75	-10.4
MSFT	125.88	79.88	Microsoft Corp. (H)	123.56	0.31	0.3
ORCL	37.50	23.38	Oracle Corp.	37.50	3.75	11.1
PMTC	49.50	23.13	Parametric Technology	46.00	1.25	2.8
PARQ	14.63	6.63	ParcPlace Systems Inc.	9.38	-2.25	-19.4
PSFT	73.00	25.75	Peoplesoft	61.50	-9.75	-13.7
PTEC	20.38	9.88	Phoenix Technologies	16.75	-0.25	-1.5
PSQL	16.88	3.13	Platinum Software	8.00	-1.31	-14.1
PLAT	26.00	11.25	Platinum Technology	14.63	-1.38	-8.6
PRGS	38.00	14.63	Progress Software Corp.	14.88	-0.25	-1.7
RNBO	26.75	16.88	Rainbow Technologies Inc.	18.50	-0.25	-1.3
REDB	61.00	29.50	Red Brick Systems Inc.	34.75	-1.25	-3.5
ROSS	8.13	2.19	Ross Systems	5.25	-0.75	-12.5
SCOC	12.13	5.50	SCO Inc.	7.00	-0.13	-1.8
SDTI	109.00	17.63	Security Dynamics Tech.	84.75	-7.50	-8.1
SKEY	51.75	13.38	Softkey International Inc.	20.63	-4.75	-18.7
SPCO	5.13	2.19	Software Publishing Corp.	3.00	0.13	4.3
SQAX	39.75	16.00	SQA Inc.	28.88	-4.13	-12.5
SOTA	19.75	6.63	State of the Art	17.38	-1.25	-6.7
SSW	81.38	36.25	Sterling Software Inc.	77.50	-0.88	-1.1
SDRC	37.38	10.38	Struct. Dynamics Research	24.75	1.25	5.3
SYBS	39.75	21.25	Sybase Inc.	23.38	-0.50	-2.1
SYMC	33.25	9.88	Symantec Corp.	12.00	-1.50	-11.1
SNPS	46.75	23.00	SynOpsys	40.50	-0.75	-1.8
SSAX	30.63	12.63	System Software Assoc.	17.13	-0.38	-2.1
SYSF	60.75	8.75	Systemsoft Corp. (H)	46.88	-4.00	-7.9
TRUV	10.13	4.63	Truevision Corp.	6.19	-1.06	-14.7
VIEW	17.50	9.63	ViewLogic Systems	13.88	-1.00	-6.7
VMRK	21.50	5.75	VMark Software Inc.	12.00	0.38	3.2
WALK	12.75	4.75	Walker Interactive Systems	10.00	-1.00	-9.1
WALL	23.75	13.00	Wall Data Inc.	20.50	-2.25	-9.9
WANG	26.13	14.38	Wang Laboratories Inc.	18.63	-2.00	-9.7
Internet						OFF 12.02%
AMER	71.00	18.00	America On-Line	40.00	-5.19	-11.5
BBN	48.75	18.00	BBN Corp.	22.00	-1.13	-4.9
CSRV	35.50	21.00	Compuserve Corp. (L)	22.38	-2.88	-11.4
LCOS	29.25	10.63	Lycos Inc. (L)	10.63	-3.00	-22.0
NETC	91.50	19.22	Netcom On-Line	29.50	-4.75	-13.9
NSCP	87.00	22.88	Netscape Comm. Corp.	54.00	-9.38	-14.8
PSIX	29.00	6.75	PSINet	13.25	-2.75	-17.2
QDEK	39.50	8.75	Quarterdeck Corp. (L)	9.38	-0.50	-5.1
RAPT	39.25	19.50	Raptor Systems (L)	22.75	-3.38	-12.9
SCUR	64.50	19.00	Secure Computing Corp.	24.50	-5.25	-17.6
SPYG	61.00	13.25	Spyglass Inc.	19.38	-4.25	-18.0
UUNT	98.75	22.75	UUNET Tech.	66.50	2.50	3.9
YHOO	43.00	22.50	Yahoo! Inc.	22.50	-2.75	-10.9
Semiconductors						OFF 6.12%
AMD	39.25	13.88	Advanced Micro Devices (L)	13.88	-2.25	-14.0
ADI	30.13	17.50	Analog Devices Inc.	25.13	-1.75	-6.5
CHPS	15.88	7.88	Chips and Technologies	10.50	0.50	5.0
CRUS	61.13	17.00	Cirrus Logic	17.69	-0.81	-4.4
CY	27.75	10.00	Cypress Semiconductor Corp.	12.13	-1.00	-7.6
CYRX	49.75	18.25	Cyrix	23.25	-3.00	-11.4
INTC	78.38	49.81	Intel Corp.	70.88	-2.63	-3.6
LSI	62.50	22.50	LSI Logic Corp.	25.88	-1.50	-5.5
LSCC	43.00	23.00	Lattice Semiconductor (L)	23.00	-12.00	-34.3
MCRL	32.50	12.25	Micrel Semiconductor Inc.	14.00	-1.00	-6.7
MU	94.75	27.38	Micron Technology (L)	27.75	-2.13	-7.1
MOT	82.50	44.75	Motorola Inc.	63.88	-0.50	-0.8
NSM	33.63	13.50	National Semiconductor	16.00	0.50	3.2
TXN	83.75	42.75	Texas Instruments	51.88	-1.25	-2.4
VLSI	39.13	10.75	VLSI Technology	13.88	-0.75	-5.1
WWTK	6.88	0.75	Weitek	0.88	0.00	0.0
WDC	29.00	14.38	Western Digital Corp.	24.63	1.13	4.8
XLNX	55.50	23.25	Xilinx	32.13	-1.19	-3.6
ZLG	54.13	25.38	Zilog Inc.	25.38	-5.00	-16.5
Peripherals and Subsystems						OFF 5.11%
APCC	25.88	7.88	American Power Conversion	11.00	-0.44	-3.8
ADPT	61.50	34.63	Adaptec Inc.	48.63	-1.75	-3.5
CBEX	13.13	5.00	Cambex Corp.	5.88	-0.25	-4.1
CGN	7.25	3.06	Cognitronics Corp.	4.94	-0.19	-3.7
CREAF	14.13	5.75	Creative Technologies Inc.	6.13	-0.63	-9.3
RACE	12.13	3.63	Data Race Inc.	5.88	0.25	4.4
DTM	9.38	4.13	Dataram Corp.	6.38	-0.25	-3.8
EMC	27.38	13.00	EMC Corp.	18.75	-1.38	-6.8
EMLX	28.50	6.38	Emulex Corp.	15.19	-2.56	-14.4
ESCC	29.00	14.50	Evans and Sutherland	22.75	-1.00	-4.2
EXBT	22.75	10.00	Exabyte	14.13	-2.25	-13.7
IISLF	4.25	1.50	Intelligent Info. Systems	2.75	0.00	0.0
IOMG	55.13	2.75	Iomega Corp.	30.38	-8.38	-21.6
IPLS	8.25	2.50	IPL Systems Inc.	4.25	-0.25	-5.6
KMAG	37.50	21.38	Komag Inc.	25.25	-3.75	-12.9
MTSI	26.38	11.25	Micro Touch Systems Inc.	18.00	-1.88	-9.4
PEAK	34.75	17.25	Peak Technology Group	23.00	-2.50	-9.8
PNCL	19.75	6.75	Pinnacle Micro Inc.	6.88	-1.13	-14.1
PTNX	25.88	9.13	Printronix Inc.	16.50	0.25	1.5
AQM	6.75	3.25	QMS Inc.	5.88	-0.13	-2.1
QNTM	28.50	15.13	Quantum Corp. (L)	15.13	-0.88	-5.5
RDUS	12.75	0.94	Radius Inc.	3.00	0.63	26.3
SEG	67.75	36.63	Seagate Technology	45.38	-2.00	-4.2
STK	44.13	21.75	Storage Technology	38.25	-3.50	-8.4
STLC	8.75	1.25	Streamlogic Corp.	4.13	-1.19	-22.4
TEK	61.88	29.75	Tektronix Inc.	41.50	5.13	14.1
XRX	54.75	36.50	Xerox Corp.	51.88	-0.63	-1.2
Services						Off 3.95%
AMSY	33.38	15.13	American Mgmt. Systems	29.00	-1.00	-3.3
ANLY	43.75	25.50	Analysts Int'l	40.75	-0.50	-1.2
AUD	43.38	30.75	Auto Data Processing	37.63	0.25	0.7
CATP	27.63	10.38	Cambridge Tech. Partners (H)	19.50	-4.08	-17.3
CEN	54.88	34.75	Cerioian Corp.	51.75	1.13	2.2
CDO	28.63	18.88	Comoisco Inc.	26.38	-0.50	-1.9
CHRZ	54.00	9.88	Computer Horizons	36.50	-8.25	-18.4
CSC	80.75	51.75	Computer Sciences	73.75	-1.75	-2.3
TSK	31.88	10.75	Computer Task Group	29.25	0.88	3.1
CPU	48.75	12.88	CompUSA Inc.	37.00	0.75	2.1
CDAT	27.50	8.63	Control Data Systems Inc.	19.00	-3.13	-14.1
EGGS	14.25	5.00	Egghead Discount Software	11.75	0.13	1.1
EDS	58.63	41.50	Electronic Data Systems Corp	53.63	-3.38	-5.9
INAC	24.25	9.13	Inacom Corp.	18.25	-0.75	-3.9
INEL	14.63	3.50	Intelligent Electronics	9.38	-0.75	-7.4
KEA	41.25	18.25	Keane Inc.	36.38	2.38	6.1
MSEL	8.38	2.25	Merisel	4.38	0.19	4.5
MICA	16.25	7.25	Microage Inc.	13.38	1.13	7.8
PAYX	50.63	23.13	Paychex	46.88	-2.63	5.3
PMS	55.50	42.63	Policy Management Sys.	53.86	-1.00	-1.8
REY	53.63	28.13	Reynolds and Reynolds (H)	50.88	-2.50	-4.7
SCBI	30.50	15.00	SCB Computer Tech. Inc. (L)	16.25	-0.50	-3.0
SEIC	26.38	19.75	SEI Corp.	21.75	-0.13	-0.6
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SSPE	26.50	17.00	Software Spectrum Inc.	22.00	1.50	6.38

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Contacting us by E-mail

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Contacting us by mail

Our postal address is PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

Respond to our **Talkback** inquiries at talkback@cw.com.

Contacting CW editors

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

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IDG News Service Correspondents

Paris bureau chief	Marc Ferranti (33) 1-4904-8001
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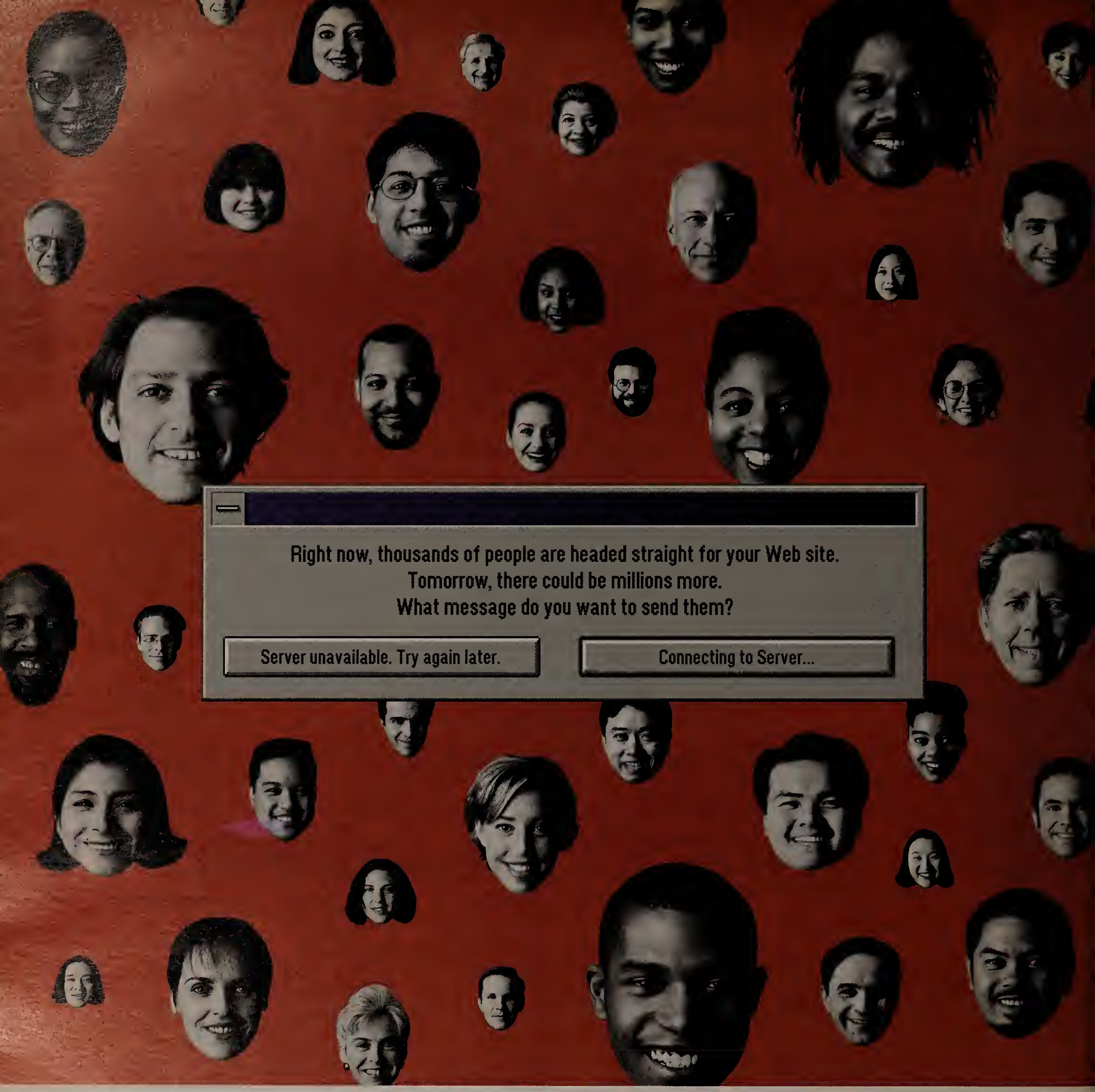

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A River runs through NT

CONTINUED FROM PAGE 1

Novell has thus far kept quiet about several of those key features, which include the following:

- A crash recovery feature that will let the NetWare file server self-diagnose and recover from server crashes. It will also keep a detailed event log similar to an airplane's black box to tell administrators where problems originated.
- Embedded symmetrical multiprocessing (SMP) that scales up to eight processors.
- Increased volume capacity to handle up to 16 million directory entries and files. That is up from 2 million in NetWare 4.1.
- A NetWare Licensing Services facility that allows administrators to simply type and click in code to add, delete or move licensed users onto the network.

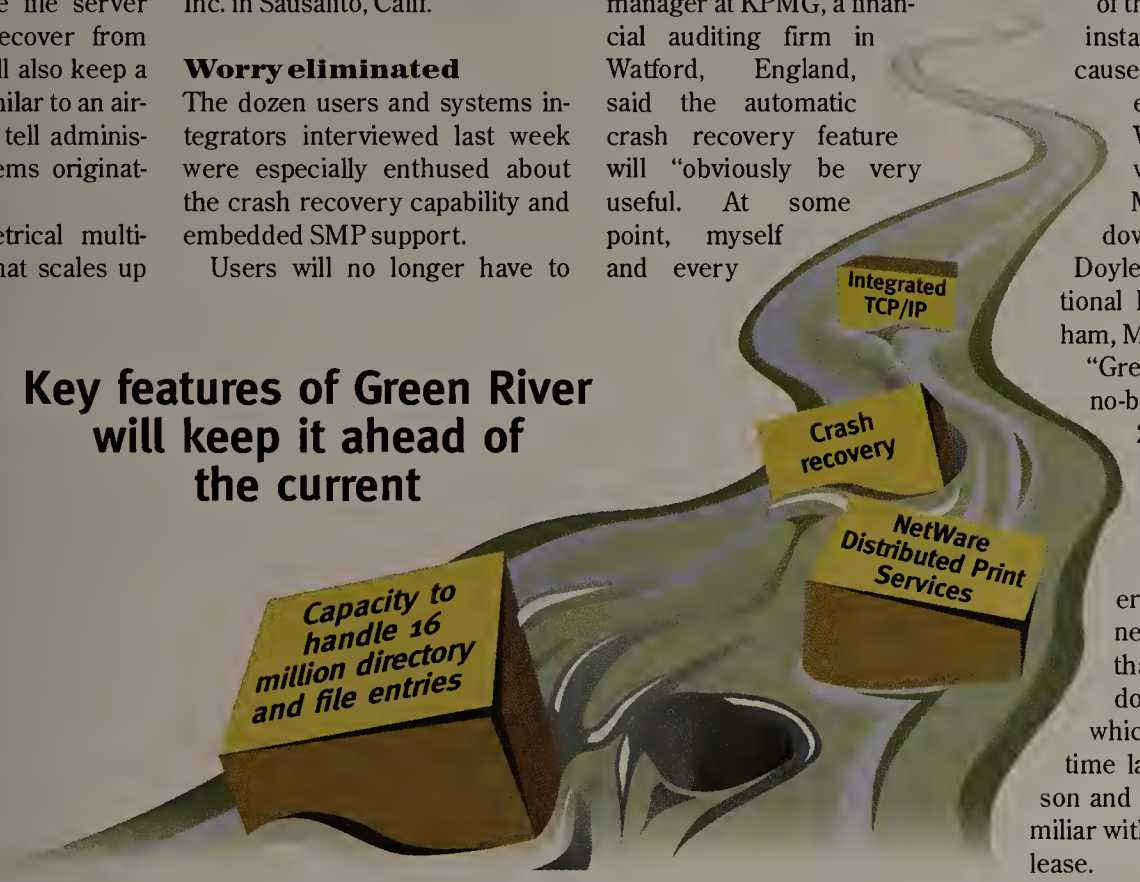
"I've been playing with Green River for months now. It's stable and a major advancement for NetWare," said Robert Harbison, an expert user and president of Network Integration Consultants, Inc. in Sausalito, Calif.

Worry eliminated

The dozen users and systems integrators interviewed last week were especially enthused about the crash recovery capability and embedded SMP support.

Users will no longer have to worry about that support from hardware vendors, said Craig Restle, president of Systron, Inc., a systems integrator in New York. "Green River's SMP functionality automatically detects how many processors are on the network and scales to it. Nothing could be simpler," he said.

Steve Pierleoni, network manager at KPMG, a financial auditing firm in Watford, England, said the automatic crash recovery feature will "obviously be very useful. At some point, myself and every other user has come into the office and found a server down," he said.



Greater than its parts

The remaining dozen features (see related story at right) aren't blockbusters like the crash recovery capability. But taken as a whole, they address many of the "livability and difficult installation issues" that caused many NetWare 3.x users to delay their NetWare 4 upgrades or, worse still, to defect to Microsoft Corp.'s Windows NT Server, said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass.

"Green River will make it a no-brainer for most NetWare 2.x and 3.x shops or users to go ahead and upgrade to NetWare," he said.

Green River offers users much more advanced networking capabilities than the upcoming Windows NT 4.0 release, which is due about the same time late this summer, Harbison and Doyle said. Both are familiar with the features in that release.

Features flow forth

The forthcoming Green River release of NetWare fills in many of the missing pieces in the network operating system that users have been clamoring for:

- Native TCP/IP protocol support.
- NetWare Distributed Print Services that let users print to and from anywhere.
- The NetWare Web Surfer integrated browser.
- Long file name support for Microsoft's Windows 95, Windows NT Workstation and IBM's OS/2 Warp.
- X.400 and X.500 support for universal connectivity.
- Novell Directory Services support for Windows 95.

Still missing is support for clustering capabilities and an object-oriented file system. They are slated for the next major releases of NetWare. — *Laura DiDio*

Switch makers fuel relay race

CONTINUED FROM PAGE 1

have pushed for the product. They likely plan to install the less expensive switches and pass savings to users via lower frame-relay transmission rates.

The Port Concentrator Shelf enables StrataCom switches to support frame-relay links from 9.6K to 56K bit/sec.

Phil Evans, a senior telecommunications consultant at Perot Systems Corp. in Dallas, said he would like to use frame-relay links at speeds ranging from 28.8K to 64K bit/sec. for numerous applications. "We could use it for Internet access, sales and inventory applications," Evans said.

The most common frame-relay connection is 56K/64K bit/sec. (see chart). But there is plenty of potential demand for slower connections.

SUPERCOMM '96

"My knee-jerk reaction is [we don't need it]. But I'm pondering it for dial-in access," said Terry Korus, MIS manager at Bemis Co. in Minneapolis and an AT&T frame-relay user. "Lower speeds could be useful for mobile and remote users."

Frame-relay usage trends

Speed	1994	1995	1996*
Under 56K or 64K bit/sec.	0	0	.4%
56K or 64K bit/sec.	74%	63%	63.7%
Fractional T1	13%	19.4%	17.7%
T1	13%	15.6%	15.5%
Over T1	0	.6%	1.3%
Other	0	1.4%	1.4%
Total ports	10,935	56,439	134,829

*Projected

Source: Distributed Networking Associates, Inc., Greensboro, N.C.

Before the Port Concentrator Shelf, StrataCom's IPX could provide only 128 ports. Now it supports 1,232, the documents said.

The StrataCom switch means savings of another type for carriers.

"They save big because they can avoid having to move to a higher-capacity and more expensive technology such as [Asynchronous Transfer Mode] by being able to squeeze more out of the switches they're already using," said Beth Gage, a broadband consultant at TeleChoice, Inc. in Verona, N.J.

No strain on purse strings

Analysts agreed that products such as StrataCom's switch will make it affordable for carriers — including Internet service providers — to add frame-relay service.

"The cost of the switches needed to offer frame-relay service has been a barrier to entry for many carriers," said Steve Taylor, president of Distributed Networking Associates, Inc. in Greensboro, N.C., which surveys carriers to identify trends in frame-relay deployment. "But that barrier is falling fast."

Users get more networking bang for the buck. See page 57.

Design tool reduces ATM learning curve

By Patrick Dryden

A leading vendor of ATM gear this week plans to endorse the first simple design tool for building high-speed cell-switching connections and integrating them into existing networks.

Users have complained that the learning curve for Asynchronous Transfer Mode (ATM) technology is one reason they are slow to embrace the technology.

To ease ATM experimentation and migration efforts, Fore Systems, Inc. in Warrendale, Pa., will outfit its field organization and channel partners with a $795 package called NetSuite Professional Design and will also promote this software to users. It is still unclear whether Fore will resell the product, which first shipped last fall, to end users.

The namesake tool from NetSuite Development, Inc. in Wayland, Mass., fills the gap between rudimentary drawing packages with a few network-oriented features and full-blown network design products that are complicated and costly, said Jennifer Pigg, vice president of data communications at The Yankee Group, a Boston consultancy. "NetSuite is simple enough to support a broad range of designers in an organization yet has the sophisticated intelligence [needed] to proof a design based on the vendors' own specifications," she said.

Product at work

NetSuite helped planners design and document the ATM network required to handle the bandwidth demands of computer simulations and graphics delivery for the Siggraph '96 conference coming to New Orleans in August.

"NetSuite let me both draw the network and figure out what equipment goes where, with what boards installed, and which connections work," said Jeff Jortner, the show's networking chairman and senior member of the technical staff at Sandia National Laboratories in Albuquerque, N.M.

A NetSuite database provides details on ATM gear as well as more common switches, routers and hubs. This helps users validate their design and document the resulting layout for future modification or troubleshooting.

Clusters are underrated technology

Charles Babcock

Computer clusters are the stepchildren of high-performance computing. We don't have much clear thinking on how to define them or what they're good for.

We only know they have grown up like weeds around us.

Clusters lack the concentrated power of a symmetrical multiprocessing (SMP) machine, which gangs up 8-32 CPUs sharing a common memory inside one box.

Clusters have none of the highly engineered elegance of a mainframe or massively parallel processing (MPP) machine. With all their communications lines strung between nodes, clusters look more like the electronic equivalent of a quilting bee than a contender for supercomputer status.

Their mundane image belies their real value. They share characteristics with large SMP and MPP machines — at a much more affordable price. With database management systems or transaction processing monitors, clusters provide parallel performance.

And the cluster possesses one clear advantage over an SMP machine. If one CPU in an SMP machine fails, it will eventually bring the whole server to a halt. Even if a CPU merely freezes — a condition brought on sometimes by a failed disk — the SMP machine eventually grinds to a halt because all data and instructions are located in shared memory.

The Meta View

A cluster supplies a poor man's form of fault tolerance.

A cluster, on the other hand, supplies a poor man's form of fault tolerance. With fail-over software, the work on one CPU is transferred to another, usually in 10 to 20 seconds.

Here and there, one can hear a lonely voice raised in defense of the cluster's merits.

Digital has sold the equivalent of 25,000 clusters worldwide since it introduced the VAXcluster in 1982, and it continues to sell more.

Microsoft is talking about a Wolfpack Windows NT cluster by the end of the year. New companies such as **Chen Systems** are trying to gain a foothold by clustering eight-processor servers.

Among older companies, **Tandem** created a fault-tolerant Unix cluster with its Himalaya line. And **IBM** will cluster up to 32 System 390 mainframes in a Sysplex cluster.

But what exactly is a cluster?

Gregory Pfister, a senior technical staff member at IBM's RS/6000 server group in Austin, Texas, is an advocate of clusters. In his book *In Search of Clusters,* he defines a cluster as a collection of whole computers, linked and functioning as a single, unified resource. Today a cluster tends to be a group of machines connected on a high-speed interconnect such as Fiber Distributed Data Interface or Fast Ethernet. If contention for files isn't handled by a database system, then some external file manager has to do the job. But those adaptations are relatively cheap compared with building a mainframe or MPP machine.

An MPP machine can be described in terms similar to a cluster. The processing element of a parallel machine, after all, has its own memory, I/O and operating system associated with each CPU.

But parallel machines require the CPUs to share a common internal interconnect, whereas processors in a cluster use their own backplanes.

CPUs in the parallel machine are tightly coordinated across the interconnect, whereas nodes in a cluster work independently, with a layer of software coordinating their efforts. Clusters can be assembled from differing machines — as long as they run the same operating system.

Mainframes, MPPs and SMPs require lots of specialized engineering, even when they make use of mass-produced parts. A cluster frequently is made up of nodes filled with common denominator parts.

If it were still cost-effective to engineer large systems, then a 16-processor mainframe or SMP machine would be priced at about 16 times the cost of a single-processor system.

Instead, these large systems cost hundreds of times more, Pfister notes.

Pfister says the pace of microprocessor development is so fast that we ought to place our bets on clusters instead of investing in bigger and bigger SMPs and MPPs.

We have no theoretical framework that allows us to see clusters as a way to achieve scalable, high-performance computing, regardless of technical distinctions. That's because we have been conditioned to think of more highly engineered solutions as the appropriate route. But clusters will get their day in the sun.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

One heck of a typo

Users of Netcom On-Line Communications Services lost Internet access for more than 13 hours last week after human error — barely more than a typo — flooded the Internet service provider's routing tables on equipment nationwide. David Garrison, chairman and CEO of Netcom, apologized for the error. He said the company is examining its operational procedures to make sure the situation can't happen again.

Same as it ever was

A year after it was bought by IBM, Lotus is retaining its own identity. At the unveiling of Lotus' Domino II servers (see story, page 16) at PC Expo, the Lotus executives and presenters wore shirtsleeves, while IBM's John Thompson showed up in a blue suit and tie.

Digital pushes ATM hard

Sources say Digital this week will announce a high-end workgroup version of its GigaSwitch Asynchronous Transfer Mode (ATM) backbone network switch and 155M bit/sec. ATM interfaces for its GigaSwitch.

Audit stymies name change

Poor Gupta. The development tools vendor is trying to change its name to Centura Software, but it can't without a shareholders meeting — which can't happen until auditors straighten out Gupta's books. The company missed a June 15 deadline for re-auditing its last three years of financial statements, and a Gupta spokeswoman said there are still "remaining audit issues." Gupta officials say they hope to make the name change official by Labor Day.

Netscape spreads the word

Not everyone swallowed claims made last week by Internet darling Netscape that the user base for its World Wide Web browser software hit 38 million. The "Computergram International" newsletter on Friday scoffed that most users never paid for Netscape Navigator, and many have multiple beta releases and other browsers installed. Also, Netscape Navigator could only be called the world's most popular PC application by separating Microsoft's word processor base into stand-alone Word (21 million) and the bundled form included in the Office suite (22 million).

The 5th Wave by Rich Tennant

"No, Thomas Jefferson never did 'the Grind,' however, this does show how animation can be used to illustrate American history on the Web."

Move over, *Twister*

Microsoft the Movie is coming to a theater near you July 16. The Redmond, Wash., software giant is taking to the silver screen for a Web page development seminar. Microsoft trainers will broadcast live from a Washington soundstage — made to look like a trendy Seattle coffee shop — to more than 50 major movie theaters in the U.S. and Canada. Web page designers in the audience can learn about Microsoft's design tools. But don't look for a matinee ticket price; admission to this movie is $35.

Barksdale denies Notes deal

At PC Expo, Jim Barksdale denied that Netscape is talking to Lotus or IBM about licensing pieces of Lotus Notes, as was reported in *Fortune* magazine, *The Wall Street Journal* and some computer newspapers last week.

User groups may have hit a rough patch in the road, but they can still laugh. At the first Technology Association Leaders' Council meeting at PC Expo, one speaker reported that some trade press editors told her that user groups appear to be dwindling because vendor support has improved so much. Now that drew quite a roar from the crowd. We like a good joke, too. Call news editor Patricia Keefe at (508) 820-8183 or reach her online at patricia_keefe@cw.com.

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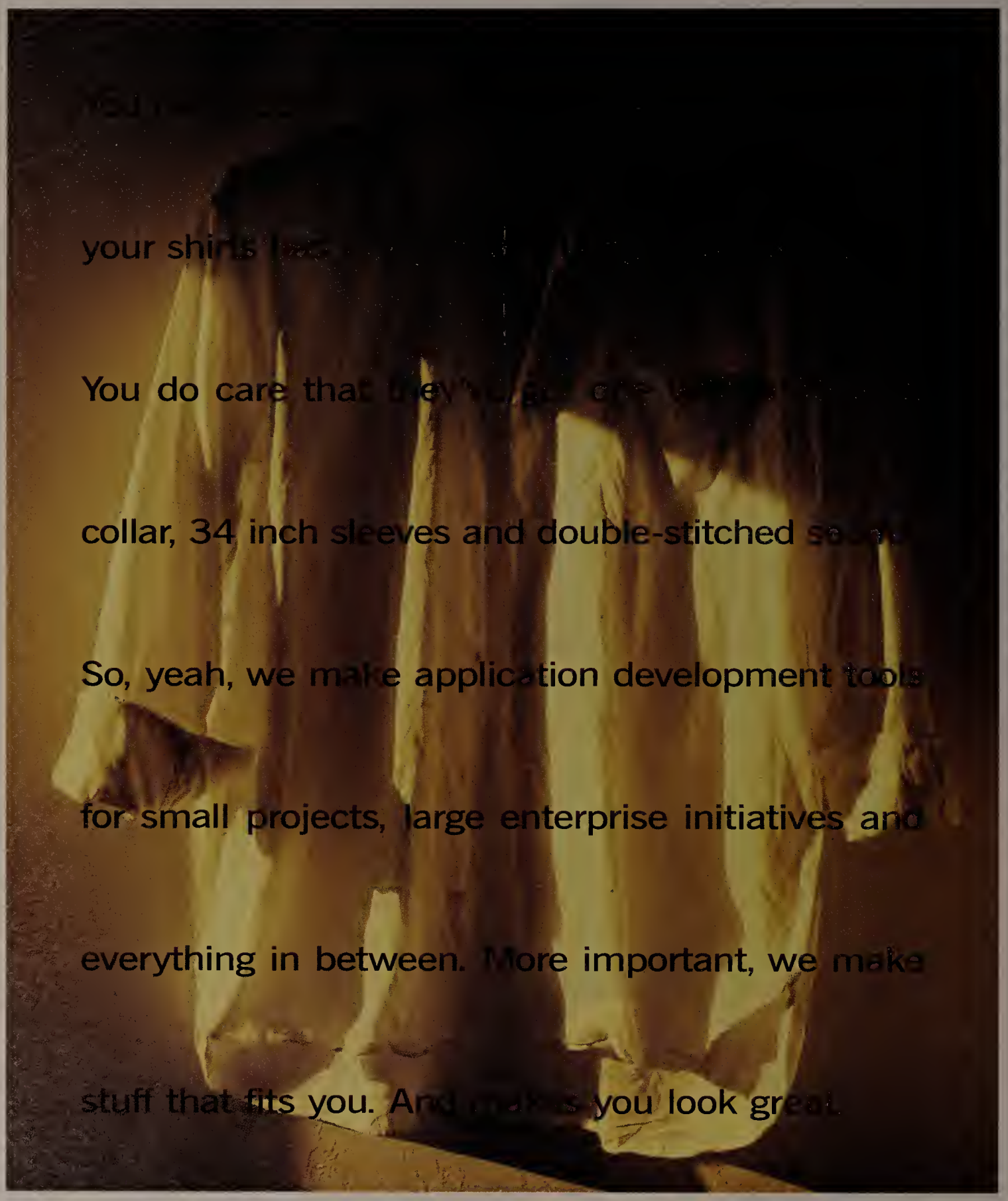

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